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MARINE INSURANCE AND ITS INFLUENCE UPON SHIP-BUILDING.

ART has been found everywhere to bear the impress of influences, which have given character to its growth, for good or for evil.

Ship-building in its eventful history has passed through many changes, and received its present form and method at the hands of circumstances, rather than experiments. The smile of royalty, and the frown of the underwriter; the cramping of the tonnage laws, and the rivalry of commerce, have each had its share of influence in developing our various modes of ship-building. It is one of the anomalies of our art, that ship-builders themselves have had less influence in establishing the maxims of their handicraft, than many others, connected ever so remotely with nautical mechanism. The sources of many of the most lasting impressions which have been stamped upon ship-building, have been far from mechanical; and as a consequence, the art has too often been degraded into a mere empirical trade.

The importance of high artistic achievements in ship-building can be fairly measured by the growing extent of commerce; and no argument need be offered to show that the institutions of commercial men should be calculated in their tendencies to exercise a beneficial influence upon this superior art. In this, and future papers, we propose to examine the system of Marine Insurance, and discuss its bearing upon the construction of ships.

The institution of Marine Insurance is of modern origin, and whether conducted on the individual or nautical principle, commerce finds in it a means of satisfying a great want, viz., indemnity for the losses experienced in the navigation of the seas. The insurer comes forward and undertakes to furnish a guarantee for the safety of ship and cargo, the value of which must be paid by the insured.

Insurance is founded upon the doctrine of chances, and seeks to provide against *accidents*, which, so far as we know, are regulated by no fixed and uniform laws—which may or may not happen. The Company that issues a policy upon a ship or cargo, do not, and cannot *know*, whether the amount of the policy will have to be paid or not. The *chances* are calculated, and on their number, *pro* and *con*, depends the value of the insurance. If the ship and cargo arrive safely, the gain is apparent, and the profit may be divided upon the capital by which the ship and cargo was insured; but if the ship and cargo be lost on the voyage, the amount of the policy becomes due to the owners or holders—the loss to the underwriters is evident, and he charges his deficiency to the corresponding side of his ledger. The rate of premium is therefore a tax, paid by the ship-owner and the merchant, which contributes to maintain the policy fund of the underwriter; and it is one that is no less hard to be borne because it is voluntarily subscribed.

Although it might appear that insurance is an incubus upon commerce, it cannot properly be so regarded, when examined in a philosophical light; on the contrary, it may be viewed as a monitorial institution, having for its object the reformation and perfection of ship-building and navigation. It is true, that, like every other institution of human origin, Marine Insurance is a money making one, but this fact need not interpose any obstacle to the accomplishment of so laudable an end. The pursuit of science and the perfection of art are to be arrived at by mankind through the broad avenue of the pursuit of *gain*. With every improvement of general adoption in building, equipping, and navigating vessels, the rates of insurance must, and will decrease, for it is to the dangers inherent in the ship equally with those legitimately belonging to the seas, that underwriters refer the sources of risk in marine insurance. The significance of this fact may be fully appreciated by the ship-owner, or the merchant; by referring to the underwriters' classification of shipping into which the qualities of *age*, *materials*, and *construction*, have conspicuously entered. From such an examination it will be discovered that the influence of underwriters' surveys must necessarily outweigh every other, exercised by third parties, in the construction of all ships that are to be insured.

Accordingly, it is with the classification of underwriters the ship-building fraternity have found most fault, and with which, we regret to be obliged to say, not without good cause.

The survey and appointment of "characters" to ships, affording a correct indication of their real and intrinsic qualities, is a work to which the most highly qualified nautical architect alone is fully equal; and the exercise of any, except the most enlightened judgment, can scarcely work in any other than a prejudicial manner upon the progress of marine art. We say *progress* of marine art, for let it not be forgotten, that ship-building is but in its infancy, although serving commerce so creditably now, compared with cen-

turies ago. Whatever checks progress, whether in the theory or practice of ship-building, should be immediately reformed.

The complaint which, in behalf of ship-builders, owners, and merchants, we would prefer against all present systems of survey and classification adopted by underwriters, is simply imperfection—the adoption of an arbitrary basis, unaccredited by science, and unacknowledged by art. The rules and regulations of most Insurance Societies, reflect the opinion of its members with but little regard to theorems of mechanical science, or the well founded maxims of experience. The survey of a given ship involves a thousand problems of functional capability for certain duties at sea and in port, and why any one, not qualified for building ships and sailing them should assume the responsibilities of their classification, may seem surprising, nevertheless, the underwriters' interest demands that some course be taken to secure it against the hazards, not only of the ocean, but of designing men. We conceive many have committed a mistake, in enunciating "rules" on subjects, in regard to which principles have not been understood, and the consequences have not been flattoring to their influence on ship-building. It should not be forgotten that prescribed modes of workmanship will not make all safe, neither will favorite descriptions of material fortify the underwriter against the hazard involved in the policy; while such restrictions on workmanship and material as he may deem to his interest to institute, may perhaps cramp the energies of the ship-owner, and blight the enterprise of the builder.

In this relation we cannot do better than to quote from the author of the Ship-builders' Manual, his remarks upon the prejudicial influences of the famous Lloyds' Association of England, upon British ship-building.

"This Association was organized in 1834, and while it has, perhaps, been the means of doing some good, it has done an incalculable amount of injury to the commercial interests of the entire British nation, as well as to her commercial dependencies. Were we to give this Institution the name it justly demands, we would denominate it a *Maritime Inquisition for the Ships of all Nations*. It is composed of merchants, ship-owners, and underwriters, in equal proportions; it bears particularly hard on colonial shipping, as well as those of foreign nations." * * * "The very idea of incorporating a company of merchants, ship-owners, and underwriters, to direct—not only mechanical operations, but to recognize them as the only legitimate channel through which all improvements must come, is preposterous and absurd.

"'It may be said that this Association has surveyors, who are mechanics or shipwrights. We inquire, for what purpose are they employed? We say, to do the bidding of their employers. Tools in the hands of merchants and underwriters, the regulations are placed in their hands, and these must be enforced. The surveyor has printed instructions, and must not depart

from the letter of the law. That every measure should be adopted, in order to insure the construction of good vessels and to secure human life against bad construction, no one will disclaim; and that all vessels should have a proper classification, no one, upon mature reflection, will deny; but that stereotyped dimensions of every part of a vessel should be under all circumstances binding, we do deny. The great difficulty lies here: a ship may in all respects comply with the demands of the register, to entitle her to a classification of A. 1, and she may not be a strong ship, while another may fall short of the requirements, and yet be a much stronger and safer ship."

"No man is competent to decide on the strength of a ship, or other vessel, who does not take into the account the principal dimensions and shape of that vessel, we care not what his qualifications may be in other respects. For example: a vessel of good proportions, or fair principal dimensions, having a shape or form adapted to the same, may have smaller siding or scantling size to her frame, than the register designates, and yet have heavier ceiling and outside plank than the register demanded; as a consequence, she would be a better ship in every respect, although excluded from her proper classification. On the other hand, another ship may be built by indifferent principal dimensions, while in timbering room, siding and scantling of frame, ceiling, planking, &c., she may be entitled to the highest grade of classification, and yet be a weak, unsafe ship. What encouragement have English ship-builders to improve models of their ships, while every part of the hull is beyond the control of their superior judgment!" * * * *

"It is also true that a general system of inspection is practised in this country by underwriters, but mechanics and ship-owners are allowed to confer and select such proportionate dimensions for the materials, as their superior judgment, based on mechanical knowledge, shall dictate; whereas the Lloyds leave the mechanic no discretionary power, however wise and discreet the improvement; its adoption is sure to brand the vessel as one of an inferior class, and from this arbitrary fulmination there can be no appeal. From this slanderous libel there is no escape; it is wafted both by wind and steam to every quarter of the globe; and although the vessel may be the model of perfected qualities in every particular, she must abide the anathemas of this tribunal of commerce. Hence, we find men from every clime, who enjoy the benefits of commercial intercourse with Great Britain, in possession of Lloyds' Register for the current year."

The Lloyds adopt the following definition of "Character," "to be in all cases fixed (not by the surveyors, [termed the exclusive servants of the Society,] but) by the Committee, [consisting of twenty-four merchants, ship-owners, and underwriters,] after due consideration of the reports of the surveyors, and such other documents as may be submitted to them:—

SHIPS A.

"To consist of new ships, or ships continued or restored.

SHIPS Æ ASTERISK, IN RED.

"To consist of ships that have passed the period assigned on the original survey, or continuation or restoration; and also, of ships not having had an original character, and which are found on survey of superior description, fit for the conveyance of dry and perishable goods, *to and from all parts of the world.*"

(This broad definition comprises all the best shipping of the world—*not yet chartered by Lloyds' Committee.*)

SHIPS Æ, IN BLACK.

"To consist of ships which are found on survey fit for the safe conveyance of dry and perishable goods on *shorter voyages.*"

SHIPS E.

"Will comprise all ships which shall be found on survey fit for the conveyance of cargoes, not in their nature subject to sea damage *on any voyage.*"

SHIPS I.

"To consist of ships fit to carry cargoes, not liable to sea damage *on shorter voyages.*"

No fewer than a score of "Rules to be observed in building ships," from timber of a specified description, are laid down; and tedious tables of scantling are furnished for the various parts of the hull, including fastening, to which "the attention of ship-owners and *ship-builders* is respectfully invited" annually by this Society. These "rules" and "tables" are frequently "*amended.*"

By means of frequent and costly surveys, and repairs under the dictation of the Society, ships may be built so as to remain on the A character for a period of upwards of thirty years; but we should add, that such ships must needs be built in England. There is one rule that provides for the punishment of refractory ship-builders, or owners, in the British North American Provinces, who may not have desired and obtained the services of a Lloyds' surveyor, to survey while *building*—it is that the ship "will be subjected to the minutest possible examination (nothing can be more '*minute*' and costly than such a survey as Lloyds' 'servants' are capable of making), previously to assigning a character; but in all such cases *one year* will be deducted from the period which would otherwise have been assigned!"

Next to English, East India "teak built ships" appear to be received with greatest favor. The most arbitrary classification of the different descriptions of timber is made with reference to the number of years to be assigned in the "character;" a regulation founded on purely speculative opinion, the injustice of which occasions alteration. No regard whatever appears from the "rules" to be paid to the season of the year when cut, although every practical man must know that certain descriptions of perish-

able timber may be so cut and prepared for use as to outlast many other kinds of naturally more durable wood. There is a chapter yet to be written on the Economy of Ship-building which will establish principles for the basis of correct and useful rules. Tables of "minimum dimensions of timbers, keelson, keel, planking, &c.," are given, applicable to vessels of all sizes; but no discrimination is made in regard to the quality of strength, or cohesion of fibre, found in the various kinds of timber permitted to be used in the construction of ships. It is all the same with Lloyds, whether the keelson be yellow pine or live oak—the scantling size is allowed to be equal, (in minimum,) and the only difference is, that the former may be appointed the A character for *four*, but the latter for *twelve years!* The only influence that can be expected to follow such teaching is evil. With Lloyds' rules in hand, or any other of similar character, the ship-builder's right and ability to *think* become discarded gifts—then why should he not build vessels so as to claim the coveted character, A? Why not submit as becomes a loyal subject, not of science and art, but of the government of Rules and Registers?

Lloyds' rules require "all sea-going vessels navigated by steam, to be surveyed *twice in each year*, when a character will be assigned to them according to the report of survey." This regulation applies to the boilers and machinery, as well as the hull. Iron ships are subjected to a careful *annual* survey, or they lose their character.

So there is nothing like *wood* and *canvas*—in short, sailing ships, built in the United Kingdom, on which to take marine risks at Lloyds. Foreign shipping stands at a discount in theory, while in practice they may prove to be equally capable of carrying cargoes with safety.

According to the definitions of character adopted by the association of Lake underwriters at Buffalo, (see March number, vol. 3 page 440,) the "*model*" is to be taken into account—an important element in the calculation. They provide that "no vessel *past* six years old, however well rebuilt or repaired, shall be placed in class A, nor one that is oversparred, or hogged, strained fr[illegible]*ing*, *loading*, launching, or other cause." They make no provision for "continuance," or "restoration," of vessels to class A, including the expensive catalogue of "fees," and *et cetera*, involved in these proceedings as under the rules of Lloyds. The Lake underwriters anticipate the *use* and *wearing out* of Lake shipping, and afford no encouragement to repairing up old vessels. Beyond the age of *twelve years* it is not expected that vessels will be kept up to a sea-worthy condition, but will be discarded from the underwriters' list.

"Steamers and propellers are to rank by the same rules as sail vessels—*if ground tackle be light, or if deficient in power*, the grade will be reduced. If wanting thorough security and protection against fire from boilers or chimney to be reduced, a full class." The question arises, in what shall

thorough security, &c., be deemed to consist? Not certainly in wooden partition walls enclosing the boiler room. There should be some interest, with voice of potent volume, that should insist upon the enclosure, on all sides of the boilers in steam vessels, by a material of incombustible character, such as iron. We regard all *wooden* materials as liable to combustion when brought approximately in contact with *heat*, and submitted to its incessant action for any period of considerable duration.

The judgment of inspectors takes the place of rules, and they determine the character of a vessel without the aid of a Committee. It follows that these officers should be thoroughly informed upon all subjects connected with ship-building, in order to be able to discharge their duties properly. Their decisions have a public as well as private importance, and exert a powerful influence on ship-building, and the efficiency of vessels within their jurisdiction.

If one thing more than another should be urged upon the attention of underwriters, ship-owners, and builders, it is the diffusion of knowledge upon *ship-building* and *seamanship*. The restrictive rules at Lloyds or any other marine society, could well be dispensed with, did knowledge, both scientific and practical, exist in their place. Rules limit the standard of utility within the orbit of information possessed by their framers. Wisdom has no exclusive origin, nor can she be won without study—those who would overtake her, must first pursue.

In place of arbitrary rules for classifying vessels, we would inculcate the spread of nautical and mechanical knowledge—a more general acquaintance with the *principles* of ship-building and navigation. The writer is of opinion, that a work entitled, "The Ship-builders' Manual and Nautical Referee," is of very great value to the student of commercial mechanism. Its contents should be familiar to every marine inspector. It treats of the different kinds of timber used in vessels; comparative strength, weight, season for cutting, modes of preservation, and measurement. The proper distribution of timber for strength and utility—the influence of shape upon the strength of vessels—the utility of adapting the one to the other—the siding and moulding size of timber for all descriptions of vessels, with scantling tables, and illustrations—on ceiling and planking vessels—fastening—the philosophy of propulsion by sail—spars, their leverage, locality, size and adaptation to all descriptions of vessels—sails and rigging—steam for ocean, coast and river navigation—ground tackle, in tabulated proportions for all descriptions of vessels. In the pages of this magazine the Editors design to contribute somewhat to the advancement of marine and nautical science, while they will endeavor, without prejudice or partiality, to guard the great interest of progressive ship-building against the errors of codes and customs, which too frequently cast the shadow of evil influence over art, by inculcating maxims at variance with correct principles and the possibilities of wise practice.

With light there is liberty—with liberty, justice and prosperity. In the classification of vessels, let the underwriter encourage improvements, looking to the safety of property and the security of life—the one is bound up in the other.

[Since the above was in type, we have received from the secretary of the Lake board of underwriters, a copy of the transactions at their late meeting, in Aug., 1856, which we shall also publish.]

WHAT KIND OF SHIPS GENERATE DISEASE?

THIS may be the first time that such inquiry ever crossed the mind of the reader. The idea that a ship could, by any possible means, become the generator of disease in any form, has never been made to conform to any tangible shape by the aid of types; and yet such is the fact, however strange or startling the announcement may be to the Nautical, Mechanical, or Commercial World. We propose to inquire to what extent such may be the case, and what kind of vessels are most likely to be subject to the expensive and annoying burdens of quarantine detention, consequent upon improper construction, for employment in tropical climates, and carrying cargoes subject to infection. That every department of the physical world furnishes the elements of destruction to human life, when subjected to confinement in bulk, and deprived of the salutary and healthful influences of pure air, no one will deny, whatever be his vocation.

But how strangely do the laws of healthful commerce conflict with the practice of the ship-builder, ship-owner, and ship-master of the present time. A ship arrives from an unhealthy port with an infectious cargo. Instead of exposing the cargo to the purifying influences of the open air, in store-houses provided for the purpose at a proper distance from the populous city, the cargo, crew, and passengers, are compelled to remain on board to inhale still longer the noxious vapors of this *prison ship*, or be transported within the precincts of a *prison house*, where disease and death cause the stoutest hearts to quail; where the exhalations of a pestilential atmosphere hurl defiance at the skill of the physician and at the sympathy of friends; and this privation, so revolting to the finer sensibilities of humanity, is regarded as one of the evidences of an advanced state of civilization. Were it possible for a human body in a state of nudity to convey disease to another, then there might be some color of excuse for such barbarous and inhuman laws; but inasmuch as the habiliments, and them only, contain the contagion, why punish the man, instead of destroying or purifying his vesture, and thus removing the cause? Why jeopardize human life, while the means are so abundant for saving it in a healthful condition? That the ship, by her improper

construction with respect to ventilation, is the first cause of disease on shipboard in most cases, few thinking men of the nautical fraternity will undertake to deny, however large their interest in all ill-ventilated ships. The experience of the past furnishes the most abundant and incontestible evidence that those vessels which have not been cared for in ventilation, are those which are most subjected to quarantine detention; and notwithstanding our coasting vessels have less capacity and make shorter voyages than the double and treble decked ships, yet they are found to be the more likely to infuse contagion through their cargoes. The reason is obvious; they are the very class of vessels which have no provision made in their construction for ventilation. Even the emigrant ship, containing hundreds of passengers, after a tedious voyage of 30 or 40 days, is found, on the termination of the voyage, to be more healthful than very many of our coasting vessels; and were these ships ventilated as they should be, there would be no cause for quarantine detention. The cause of fever on ship-board, whether it be known as *ship* or *yellow*, or any other color, lies deep in the elements of construction, and would never have been known if proper attention had been paid to the construction of vessels. If, instead of heaping up masses of timber in the hold, along the line of, and directly over the keel, to secure strength, and assist in producing disease by damming up the channels of circulation; if a plate iron keelson of half its size, were constructed, as shown in vol. 2, No. 6, of U. S. Nautical Magazine, more strength would have been obtained, with less weight, and at the same time a channel provided for the free circulation of pure air admitted from the bow above deck, and conducted down on the inside of the apron, connecting with the keelson at its forward end, and passing out at the stern in the same manner, dispensing with most of the present encumbrances which philosophy, experience, and common sense teaches, do not furnish a reliable means of ventilation, such as will secure a healthy atmosphere in the vessel. It is in the immediate vicinity of the keelson that the greatest amount of filth collects in ships, consequent upon the leakage of the vessel, much of which is collected while lying at the wharves when in port, where the sewerage of cities are discharged. Few have, perhaps, a just conception of the reproductive power of filth with which so many vessels of all nations abound, in the vicinity of the keelson; a short extract from the September number of Hall's Journal of Health may furnish a more just conception :—" A single atom of Spanish moss attaches itself to a southern tree; every moment and hour, day and night, summer and winter, it steadily extends itself, until the whole tree is hung in the drapery of death.

" The toad-stool mushroom, so deadly in its nature, is the work of a night, and augments with wonderful rapidity.

" So it is with a low grade of animal and vegetable growth, which feeds on filth, and reproduces itself with wonderful celerity, thus spreading its area,

and concentrating its corrupting and destructive agencies, sweeping away human life like chaff. These pernicious growths, scarcely themselves perceptible to the naked eye, have something immeasurably more minute, which answers to seeds, which, flying in every direction, and attaching themselves to all moist surfaces, begin instantly to grow. Thus it is, that spots of neglected filth need but a little moisture and warmth to breed their deadly contagions, and scatter their leprous diseases far and wide."

If such be the fact, and who will deny its truth, have we not everything to expect in the form of disease and death from the filthy and ill-ventilated condition of our vessels, consequent first and mainly from mal-construction? Let it be remembered that it is not the dampness of a vessel's hold that is deleterious to health, but the absence of pure air, and the accumulation of *filth* and *dirt*, which the present mode of construction is so well calculated to collect.

But another extract from the same number of Hall's Journal is in perfect keeping with our subject, on confined and open air:—

"If a small portion of the air of a crowded room is made to pass up through distilled water, a sediment is left, which contains various colored fibres, of clothing, portions of hair, wool, bits of human skin, or scales, with a kind of fungus growth, with its particles of reproduction, which adhere whenever they strike or fall on wet surfaces, or bruises, or sore places, and grow wherever they adhere; there is also a small amount of sand and dirt, with great numbers of various forms of animal life.

"No wonder, then, that the blood is soon tainted and corrupted by making sitting apartments of our chambers, by spending hours in crowded assemblies, or stage-coaches, or rail cars, where every breath we draw is a mouthful of monster life.

"But if that room be emptied for a few hours, and a portion of its atmosphere be treated in the same way, nothing will be found but a little sand and dirt, a few fibres of wool and cotton, only a trace of fungus, but no animal life, and no bits of skin and hair, and scales of dead human matter.

"If five times the amount of neighboring out-door air undergoes the same process, a fibre of wool or cotton is now and then found, a little sand and dirt, with specimens of fungus and their atoms of reproduction, but no traces of decayed animal matter, and no signs of organic life; thus showing, that in our close apartments we are surrounded with organic living bodies, and that animal matter, living, dead and decayed, loads the atmosphere which we breathe in the chambers of our dwellings and crowded rooms, and thus these corrupting particles are swallowed, and are breathed into the system every moment of in-door existence, thus strongly urging us, by all our love of pure blood and high health, to hurry from our chambers at the earliest moment in the morning, and to consider every hour of out-door breathing a gain of life."

That impurity on ship-board is the primary cause of fevers, *whether ship* or *yellow*, is a truism that no one who is at all conversant with the laws of health, will undertake to deny. Bad air is always an extraneous production, and can only be removed by the induction of pure atmospheric air; and this may be always found accessible, whether at sea or in port, when the proper means are adopted for securing it. The ocean, above all other parts of the globe, furnishes the most abundant supply of pure air, at the least cost; and whatever means are adopted, which fail to secure a free and effectual mode of ventilation, are proportionately ineffectual, and should at once be abandoned. Wind-sails and planksheer valves are imperfect ventilators; the former is positively injurious, for the reason, that they *drive back the noxious effluvia* that would otherwise ascend from the steerage and holds of vessels when opened. The best means of infusing a free circulation of pure air in the hold of a vessel, and, as a consequence, drive out stagnant poison, is that which introduces the air at the base of the cargo and on the upper surface of the lower decks; by such means, the bad air, which is always the lightest, and seeks to escape upward, will find its way out of hatches and planksheer ventilators, when open; but these we know are never attended to at at sea, and consequently are of little use for the purpose for which intended. Vertical ventilators inserted along the deck are but wind-sails; the fact of their being made of iron, does not change their character for efficiency—they fail to accomplish what they are designed to. A ship may, and should be the most healthy habitation that mankind has ever yet tenanted; and yet the sailor and ocean traveller are subjected to all the abominations which impurity and ill-ventilation secure as a legacy to nautical commerce, under the present mode of construction and ventilation.

If the mortality of a convict ship may, and has been reduced from 10 to 1½ per cent., simply by paying the passage only on those who are landed in health, surely the avoidance of Quarantine detention should be an incentive of no less moment, aside from the general efficiency of the crew, and the greater durability of the ship. What folly to talk of science in the construction of vessels, while the *pig pen and the chicken coop* have more attention paid to their cleanliness and ventilation than the steerage, forecastle, and cargo. Where is there to be found a good housewife who would not ventilate the sleeping apartment of but one individual, after a single night, by opening the windows; and yet the ship has no such ventilation, during her whole history, notwithstanding she has had hundreds on board, both day and night, for months at a time, in addition to a cargo, sometimes reeking with the fumes of contagion; and yet, forsooth, we are told by the would-be *commissioners of health*, that the only antidote for the spread of ship and yellow fevers, is Quarantine Hospitals. Away with such arrant nonsense. If the merchant would make his ship the safest and healthiest domicil on the globe, *make her a well ventilated life-boat;* and then, and not un-

then, will man, woman and child, cease to cry out against the dangers of the ship, from disease and death on ship-board. The very basis of nautical construction should be such as would insure safety to *life*, *health*, and *property*; the elements of profit are all couched in these, whether on the part of the builder, the owner, the master, underwriter, or passenger—whereas these are scarcely thought of, or cared for. If the present type of ships are an index from which to judge of the interests of the parties concerned, it is of more consequence to make healthy ships than has been generally supposed; and instead of trusting the health of our commercial cities to what has been improperly called a board of health commissioners, who know nothing about a vessel, it should have been handed over to the ship-owners, insurance companies, and board of underwriters, who may have the whole matter in their own hands. *A small reduction in the premium of insurance* for ships of proper construction would regulate the whole matter, *and cause Quarantine detention laws to be regarded as a nuisance*, not to be tolerated in this age of improvements by the most fastidious. Marine store-sheds for depositing infectious cargoes to be aired, having a weather proof roof with canvas sides, to be dropped only in time of storm, and then only on the weather side, is all that is required by way of Quarantine detention of vessels. Destroy the cause of disease on ship-board, and the effects will cease. Can there be found in this commercial country a nautical or commercial man, so steeped in credulity, as to believe that the vessel which has been subjected for months to Quarantine detention at New-York, with a cargo of rags, would have been thus detained, if constructed as we have described? Would not the same crew that brought the vessel to port, have discharged her cargo under the marine restrictions referred to, if the vessel itself had been in a healthy state?

SEA WAVES AND SEA SICKNESS.—In our last issue we quoted from the Scientific American a paragraph, setting forth as one of the advantages of constructing large steamers, a corresponding exemption from sea-sickness. To this theory we entered our protest, remarking, that the motion of the vessel was not diminished in proportion as the length was increased, and that the shape governed the motion beyond the rise and fall of the sea. The editors demur, and inform their readers, that they have made some sea-voyages, in which this was not the result of their experience. Now we, with other readers of that journal, would be glad to know more of their experience.

Perhaps they will oblige us so far as to furnish a list of their sea-voyages, with the dates, and names of the vessels. When it will be our pleasure to enlighten them still farther, by endeavoring to reconcile the thermometer of their sea-going, bilious, temperament, with the principles of philosophy, by a more practical demonstration. What say the editors, shall we have the list?

RESPONSIBILITY IN THE NAVY.

WE have the most flattering assurances of those whose opinions we highly value, that our views, already presented, touching the absence of direct and palpable responsibility in the department of construction at our naval stations, are pat and to the point; and we are right glad to know that in this we have not ruthlessly invaded the *sanctum sanctorum* of naval propriety.

Every tongue of common sense tells us that the Naval Constructor, who is supposed to know where every plank is laid, and where every bolt, spike, or nail is driven, should entirely control his work, and command the hull until it is ready for the naval profession proper—the officers and crew. Then, and not until then, should the commandant of the station become the responsible party, and thus should we know exactly where the responsibility of one party ends, and where that of the other commences. Nor could the commandant, as now, get all the credit of success from the laying of the keel, to weighing anchor for sea, nor cause all failures to fall into the gulf of irresponsibility between himself and the constructor.

There is irresponsibility in the Navy afloat, as well as ashore. It is occasioned both by the absence of suitable laws and regulations to prevent it, and by neglect to hold offenders against the articles of war to a strict accountability before courts of inquiry and courts-martial. Good government on board ship, as on shore, can only be had by prompt obedience to uniform, clear, and simple laws of a general character.

It is a remarkable fact, that there are now no general laws for the deck government. Every commanding officer is permitted to make his own "internal rules and regulations," and the consequence is, that when an officer or a seaman is transferred from one ship to another, he has a new lesson to learn. It is the prerogative of the Department to make *general* internal rules and regulations, and there should be a distinct and separate set for each class of vessels, published by its authority, and constantly exposed in all parts of the ship, to prevent their violation. This uniformity of internal government would prevent all accidental violations of law, and promote general efficiency.

More than one-half the articles of war of 1800, which are read every week to the crew afloat, have been annulled by subsequent enactments, and the old book of Regulations have shared the same fate, by specific orders of the Department, which are constantly being issued to suit current emergencies. Nothing is so much needed in Naval government at this time, as a codification of its laws, its rules and regulations, by the Department; and most especially those laws which appertain to internal government on ship-board. Let the operative matter of the old articles of war, and of the Commissioners' Regulations, be eviscerated from their voluminous proportions, and the

débris buried so deeply alongside of the ancient and barbarous "usages of the sea-service," that the hand of no despotic resurrectionist may ever reach it.

But general efficiency is impaired, and cordial subordination disturbed, by the neglect of officers to enforce laws which already exist. It is clearly the duty of each and every officer afloat, to see that laws for the government of the whole are not violated with impunity. Happily for the cause of justice, the youngest midshipman may prefer charges against the oldest commandant, for rank can claim no immunity from the violation of law. All are responsible with their commissions, and even their lives, for their conduct. In this, therefore, it is not so much the absence of responsibility on the part of the offender, as the neglect to enforce the laws made for the punishment of offences.

If officers of the Navy had been held to the strictest accountability in this respect—if suspension, courts of inquiry, and courts-martial had followed certainly and quickly upon offences—if reprehensible conduct on their part had been the subject-matter of clear and probable charges and specifications, and every dereliction had been suitably punished—there would have been less necessity for convening the late Naval Retiring Board, by which, without the privileges of a court of inquiry, some of the best, as well as some of the worst officers of the service were swept from the list. And the effect prompt measures would have on the discipline of the crew is incalculably beneficial, for the reports from every man-of-war returning home go to show, that sailors are better governed by the *good example* of officers, than by the cat-o'-nine-tails.

PURSERS AND SURGEONS, U. S. NAVY.—After years of trial with Congress, and with the Navy Department, these officers have succeeded in securing for themselves that position in the service which they deserve. In former times they had neither rank nor ample pay, in the form of salaries, yet the pursers were trading men on shipboard, permitted by the captain to make certain profits on little knick-knacks peddled out to the crew, and *Surgeons' mates* were promoted to surgeons without any test of qualification.

Within the last fifteen or twenty years, the character and official position of these officers have been radically changed and improved in our naval service. A most thorough and rigid examination by a Medical Board of old surgeons is necessary, before a young physician can get the appointment of Assistant Surgeon; and after four or five years of sea-service, he must pass another searching investigation to be advanced to Passed Assistant. By this sifting process, the very best medical talent of the country is secured to the Navy. Our pursers are now the government's treasurers

aboard-ship, heavily bonded for the faithful discharge of their treasury duties, and directly drawing and disbursing the public money, under the laws of Congress, and the orders of the Treasury Department, to which they are directly accountable. The public chest is in their charge, and not in the custody of commanding officers as formerly; for it is a joint order of both the Treasury and Navy Departments, that "no credits will be allowed to pursers for advances or loans made by orders of commanding officers, no matter how frequent or peremptory such orders may be; and the law of Congress itself, speaking directly to the purser, tells him that he shall not advance or loan any commodity to any officer, under any pretence whatever. He is made the absolute custodian of the finances, and pays just bills against the government only when they are legally authenticated by the commanding officer of the ship or station to which he is attached.

By a law of Congress, surgeons and pursers of twelve years' standing, rank with commanders, and those under twelve years, rank with lieutenants. Their salaries are from fifteen hundred to thirty-five hundred dollars—all perquisites having been abolished. They wear the uniform of their relative rank; and pursers, like commanders, are allowed clerks, with the pay and privileges of midshipmen.

Thus are these indispensable grades in the service elevated to their proper footing, as an integral part of the ship's government; and as they are considered the most desirable offices for young men in the President's gift, the first medical talent is secured, and the constantly occurring vacancies in the purser's list being filled by men of character, instead of that class of ancient conveniencies so ridiculed by Marryatt and other English novelists.

GREAT DEMAND FOR COMMERCIAL EXTENSION.—However strange it may appear, that while we are the largest surplus producers of the necessaries of life on the globe, and can feed the millions of Europe with our surplus breadstuffs, yet we are importing far beyond the sales of our produce, thereby causing a constant drain on the bullion of the country; whereas we remain inactive in reference to other markets whose merchants would be glad to exchange their products for our breadstuffs, naval stores, and such other things as we may have to exchange. The largest and finest trade on the globe is open to American enterprise in the ports of *Austria, Spain, Portugal, Greece, Italy, and Turkey*, by the way of the Mediterranean, and a much more direct route to intercourse with China, than by the Cape of Good Hope. The United States have all the facilities in their present development for exchanging commodities to that extent, which will furnish and supply our most extravagant artificial wants were their facilities properly improved.

REGATTA OF THE NEW-YORK YACHT CLUB.

As announced in our last issue, the second Regatta of the season came off on the 8th of August, and by the politeness of C. H. Haswell, Esq., we have been favored with accurate returns. It was, in many respects, the most interesting the Club have ever had, and one from which we hope something will be learned.

The Sailing Committee, for the Regatta at New-Bedford, appointed at the meeting of the Yacht Club, at that place, on the 7th inst., avail themselves of this the earliest opportunity, to submit to the Club a formal report of the occurrence and results of the Regatta. The delay in submitting this report has occurred from the circumstance, that the areas of the sails of all the yachts entered for the Regatta were not reported by the measurer until this instant, in consequence of its being impracticable to measure some of them until subsequent to the Regatta.

ENTRIES OF YACHTS.

1st Class.

			Tons.	Sq. ft. of canvass.
Sloop	Julia	J. M. Waterbury,	83·	3307·45
"	Widgeon,	D. M. Edgar,	101·9	3502·44
Schooner	Haze,	M. H. Grinnell,	87·2	3542·5
"	Twilight,	Geo. Griswold, Jr.,	73·6	3283·43
"	Favorita,	A. C. Kingsland,	138·	3983·20
Sloop	Silvie,	C. H. Stebbins,	100.	4580·88

2nd Class.

			Tons.	Sq. ft. of canvass.
Sloop	Una,	L. M. Rutherford,	67·5	3060·76
Schooner	America,	R. F. Loper,	69·5	2701·98
"	Sea Drift,	I. F. Holbrook,	63·7	2454·24

3d Class.

			Tons.	Sq. ft. of canvass.
Sloop	L'Esperance,	Crawford Allen,	20·	1290·59
"	Mystic,	John A. Dayton,	32·7	1970·90
"	Richmond,	Chas. H. Mallory,	27·4	1845·61
"	Ray,	W. H. Thomas,	30·3	1843·75

The times of starting, turning the stake-boats, and of arrival, were as follows:—

3d Class.

Starting at 10.50, A. M.

	Boat off Quick's Hole.			2d Stake-Boat.			Stake-Boat.		
	H.	M.	S.	H.	M.	S.	H.	M.	S.
Richmond,	12	40	39	1	22	0	3	7	39

2D CLASS.

Starting at 10.55, A. M.

	H.	M.	S.	H.	M.	S.	H.	M.	S.
Una,	12	31	34	1	17	0	2	28	58
America,	12	36	13	1	15	0	2	33	14
Sea Drift,	12	40	29	1	11	0	2	45	0

1ST CLASS.

Starting at 11, A. M.

	H.	M.	S.	H.	M.	S.	H.	M.	S.
Julia,	12	20	47	1	13	0	2	23	15
Widgeon,	12	39	43	1	7	0	2	39	50
Favorita,	12	37	40	1	6	0	2	33	58
Haze,	12	44	10	1	3	0	2	34	42
Twilight,	—	—	—	1	30	0	3	12	45

RESULTS OF THE RACE.

	M.	S.
The Julia beat all of her class, viz:		
Widgeon,	19	50
Haze,	36	27
Julia beat the Favorita,	44	13
" " " Twilight,	49	6
Widgeon beat the Haze,	16	37
" " " Favorita,	24	23
" " " Twilight,	29	16
Haze beat the Favorita,	7	46
" " " Twilight,	12	39
Favorita beat the Twilight,	4	53
The America beat all of her class, viz:		
Una,	3	13
Sea Drift,	6	36
Una beat the Sea Drift,	3	23
The Richmond beat all of her class.		

It was impracticable to take the times of many of the boats at the 1st and 2d Stake-Boats, and of the L'Esperance and Mystic at their return.

MEMORANDA.

The Silvie was withdrawn before starting.

The Widgeon, in consequence of a defect in her mast, sailed under a reefed mainsail and bonnet off of jib.

The Ray turned back soon after starting.

The Haze parted her fore-sheet.

The Favorita split the bonnet of her jib.

The Richmond was compelled twice to haul down her jib to repair rigging.

The wind was very fresh from the S. W. during the whole of the ra The L'Esperance, however, the yacht of least tonnage, carried whole sail the entire course.

The Haze set her flying-jib, main topmast-staysail No. 1, and main

topsail; and the Favorita set her flying-jib and main topmast-staysail, the areas of all of which are included in the allowance of time.

The Citizens of New-Bedford, at the request of the Yacht Club, for an associate member of this Committee, selected THOMAS NYE, JR., Esq., who very attentively officiated with us in the discharge of our duties, and met with us on the morning subsequent to the Regatta, when the prizes were awarded as follows:—

1st Class, to the Sloop Julia,
2d " " " Schooner America,
3d " " " Sloop Richmond.

ABSTRACT *of the result of the Regatta, when reduced to the uniformity of one standard, all allowances of time for canvas, starts, &c., being duly estimated.*

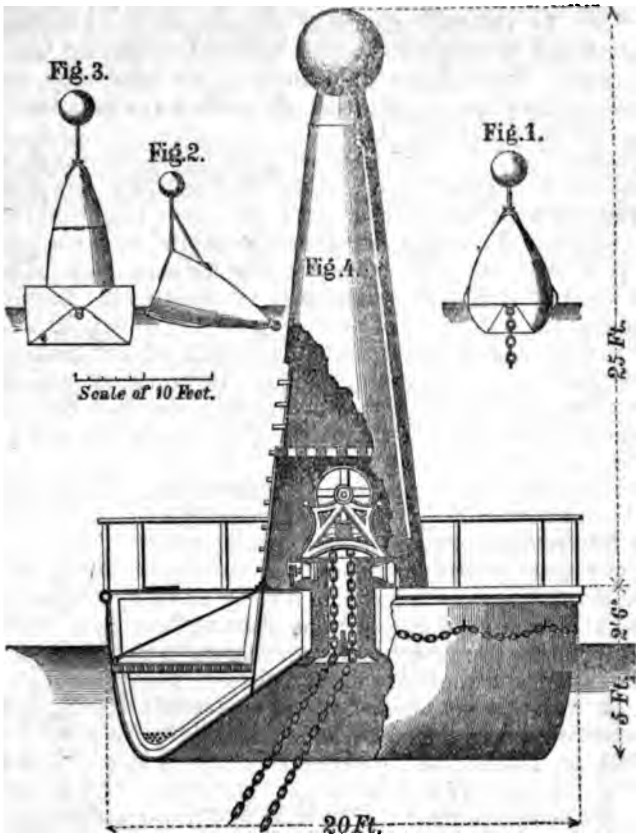
ORDER OF SPEED.

	Time of sailing. H.	M.	S.	Difference in speed in time. M.	S.
1st, Julia,	3	23	15	—	—
2d, America,	3	38	14	2	22
3d, Widgeon,*	3	39	50	5	27
4th, Una,	3	33	58	5	35
5th, Sea Drift,	3	50	—	8	58
6th, Richmond,	4	17	39	17	52
7th, Haze,	3	34	42	36	27
8th, Favorita,	3	33	58	44	13
9th, Twilight,	4	12	45	49	06

YACHT RICHMOND.—By the politeness of C. H. Mallory, Esq., the owner of this vessel, we have been put in possession of her lines, which we publish in this number. The Richmond was built at Mystic, Conn., by Mr. Richmond, in twenty-seven days. She is substantially built, and is secured against foundering by the introduction of 120 bushels of cork between her frames. Her bottom is of cedar and double thickness, with an equitable distribution of butts. The first five strakes below planksheer are of oak, and without butts. She has a centre-board of thirteen feet length. She has won a good name for speed, in several regattas. In the late regatta at New-Bedford, August 6th, she was the first of her class. While on the late cruise, the yacht fleet left Stonington on Wednesday morning, August 6th; the Richmond was the sixth yacht in starting. All came-to at Newport, where they lay about one hour, after which they got under way, and the Richmond was the first yacht at New-Bedford.

The cost of this vessel was $3,000. We have understood that she is for sale.

* Deducting for reefed-mainsail, &c.



BEACONS FOR SEA-COASTS.

The subject of the proper construction of beacons for the sea-coast, and for shoals, reefs, and rocks in rivers, is not one of small magnitude to mariners. With the greatest extent of sea-coast of any commercial nation on the globe, and with a commercial intercourse of no less importance, it is well to inquire what are the facilities afforded for marking those dangers to safe navigation. We have floating and stationary lights, with all the variety of buoys, which furnish the mariner with what are supposed to be timely warnings against those hidden dangers. Whether they are supplied in sufficient number, it is not our purpose at this time to inquire, but we propose to examine the question of their efficiency. The principle of stability is of no less importance to a floating light, than to a floating fabric, for the purposes of navigation. The subjoined engraving exhibits a comparatively new principl which, although known for at least two years in England, is entirely new the United States, where so many buoys are required to mark our extensi sea-coast. The accompanying descriptive results from the Nautical Magai [Eng.] will, we think, be read with interest.

"The acknowledged utility of these buoys will, we hope, ensure their universal adoption; for the vast amount of property now afloat demands that every means should be employed which will in any manner tend to render navigation secure. We subjoin an outline of the new buoy, fig. 1.; one also of that in ordinary use, fig. 2; and of a mode by which the latter may be adapted to the new plan, fig. 3.

This adaptation consists in first removing the heavy ironwork with which the buoy is encumbered, and then placing its head, as a new floating base. By this arrangement all the buoys around our coasts might be rendered not only upright and plainly visible, but they also might be made *safety buoys*, whilst those now used are wholly unserviceable for saving life. The opportunity thus afforded of giving to mariners the "inestimable boon of a steady seamark," and at the same time of providing for the drowning sailor a floating refuge, surely cannot be neglected. Which of our public maritime bodies can persist now in continuing the present primitive and crude mode of floating the buoys of the old form, laying them on their sides in the sea, and thus depriving them of their greatest efficiency for the real purpose for which they are intended?

Economy very properly enters into all our arrangements in these days; and we doubt not that if this plan comes generally into use, the country will save at least 30 per cent. of its present expenditure.

Our present system (if such a set of crude arrangements can be so termed) affords us no floating seamarks between a buoy and a light vessel. The new construction gives us a good conspicuous floating beacon, a desideratum of long standing. There are many hidden dangers which require bold and conspicuous marks, and there are many positions where, though the exhibition of a light vessel is not needed, the unmistakable floating tower will be the means of saving many lives and much property. We subjoin an outline of this beacon twenty feet in diameter at the water line, and having a tower rising up twenty-five feet in height, surmounted by a ball three feet six inches in diameter, see fig. 4. The body and tower are of plate iron, the interior formed with four bulkheads or partitions, so constructed that if any accident should occur to any one part the structure would not be submerged. The upper part of the tower is fitted with a door and ladder irons, by which access is had to an upper compartment, containing biscuit and water for those who may seek refuge on the beacon. The central chain mooring, which holds it at the centre of gravity of the mass, is connected with a windlass, which, with the central tube or hawse pipe, turns freely as a swivel in the middle of the body; or, in other words, permits the body of the beacon to rotate freely if so-disposed, without twisting the chain; the links of the chain being held firmly by a stopper close to the mouth of the hawse pipe. By this contrivance of a continuous or endless chain, rove through a suitable shackle attached to the mooring anchor, any portion of it may be sighted, examined, and painted periodically, so as materially to lessen the chances of deterioration or failure. The tower is also fitted with a signal line, by which notice may be given if assistance should be required.

A beacon similar to this was built by the Trinity House two years since, and was placed by the direction of that board in the overfall of the sea at the South Sand Head of the Goodwin Sand. It was not placed there as a mark, but only to test its qualities, for nothing in the shape of a ship could have retained her position where it was moored. The South Sand Head Light vessel was about a mile distant from this beacon, and the master and crew

were directed to watch it. A description of the manner in which it rode in such disturbed water is important; and we consider it right to preserve here the two following letters from two veteran seamen, one from the master of of the South Sand Head Light vessel, the other from our much esteemed correspondent, Capt. Martin, the respected Harbour Master at Ramsgate.

The master of the light-vessel says, "I here give you my opinion as near as I can, from what I have seen while watching it. The tide does not seem to have any particular effect upon it, to cause it to sheer about, or to give it a list, or to turn it round more than a vessel; the wind cannot affect it to cause it to roll. Its motion is quick, and caused by the waves. Its motion depends on the heave of the sea, whether it is a short breaking sea or a long bowling sea: in a short breaking sea its motion is the greatest. The angle made by it is not so great as the waves it rides in. When I was upon it I could not perceive any tugging motion on the mooring. It turns round as a vessel would do with the tide, that is to say, it follows the tide round. I could not distinctly see whether the sea washed over the deck, but I should think it did; there was not, however, any heavy breaking sea against the tower; if so, I should have seen it. I should think it rolled out of the perpendicular about five feet as near as I can guess."

The following is the letter alluded to from Capt. Martin:

Harbour Office, Ramsgate,
November 18th, 1854. A Heavy Storm.

MY DEAR SIR,—Your letter found me in a most anxious position, at 7 h. 30 m. A. M. the Gull Light having fired three alarm guns. The harbour steamer, with the life-boat manned, all ready for a start; but, although quite clear, nothing can be seen upon or near the sand, and if anything has gone, it has instantly gone to pieces. The sea is so heavy over the pier at high tide that it is impossible to tell what damage it may do. Wind E. N. E.

Well! I have felt great interest in the experimental beacon, and, although I have not taken the liberty to inspect it, its principle and merits have been thoroughly explained to me. I have continually inquired of our cruising luggers as to whether it remained and how it rode, and they have thus far bestowed unqualified praise upon it, as to its shape,—being so different an object to all other buoys or beacons they imagine it would be sure to attract the notice of any shipwrecked crew who had taken to their boats and were adrift upon the waters. It is this moment undergoing a heavy ordeal. What must the sea be there when I tell you what it is here? I have great apprehension for our stone parapet unless the storm abates.

When our luggers returned to-day about noon, I put the following questions for your information:—

Have you been near the South Sand Head?—Yes.

Did you see the new experimental beacon?—Yes, we sailed round it.

How near were you to it?—Close, close within hail, if there had been anybody upon it.

Could anybody have been upon it?—Why, yes sir, it was as upright as a dart.

Well! but there must be a tremendous heavy sea there, how does it ride?—Oh! rides, why it rides well enough, it is right upon the top of everything, and we can see it a precious long way off.

What! can you see it as far as one of the minster buoys?—Yes, farther.

Why, how can that be?—Why, it doesn't roll about so much; it lifts right

up and down, and don't you know, sir, it looks like a light-house a little way off, &c., &c.

There is, unfortunately, a confusion of ideas in relation to the action of the sea upon a circular float moored from the centre of gravity. We have heard men of sound judgment upon most nautical subjects talk of the difficulty of mooring such a body, and compare it to mooring a ship with its broadside to the sea, and even speak of the " broadside" of the circular body itself. That there is no analogy whatever between the two, is evident from the result of the practical trial above stated. The diameter of the beacon was twenty feet, the beam of the South Sand Head light-vessel was twenty feet also;—from the reasoning of these gentlemen,—the light-vessel having a good entrance and the beacon being moored " broadside" on,—the light-vessel ought to ride with greater ease. But what was the fact? While the light-vessel, tied down by her head to the bed of the sea, was dipping and plunging and splashing the seas over herself, and with her mast vibrating from side to side more than 26° from the perpendicular,—the sea never broke against the beacon, though its deck was only two feet six inches above water, and the tower of the beacon never heeled more than 10° from the perpendicular. This practical result is surely a refutation of the "broadside theory."

The Deputy-Master of the Trinity House very justly observed, in the discussion before alluded to," that the new buoys were eminently successful, and would prove of great service by being placed where light ships could not well be employed." There are many such positions, one or two of which we will venture to name. There is, for instance, the dangerous causeway in Cardigan Bay, called Sarn Badrig. The trade some time since applied for a light-vessel to be placed off the western end of these rocks. It was not, however, we believe, considered necessary to incur this expense; at all events the light-vessel is not there, and the spot is simply marked by an ordinary buoy, similar to that shown at fig. 2, which is not discernable in an ordinarily dark night. Were the beacon we have just been describing moored in lieu of the buoy, it would render this danger distinguishable in even the darkest night; for light, which is always to a certain extent visible above the expanse of the sea, would enable the mariner to readily " pick up " this substantial tower, rising, as it would seem, out of the ocean.

There is another even more dangerous reef which is at present without any mark. It extends about two miles and a half off the N.W. end of Guernsey, and is called the Hannois Rocks, and a dismal catalogue of losses associates an unusual degree of sadness with the name of this dreaded danger. The exhibition of a light to mark these rocks has been long in agitation. While the necessary arrangements are going forward, before this can be done, a beacon placed half a mile outside of the danger might be the means of saving many a vessel; and such beacon, being itself a place of refuge and capable of holding more than 100 men, and having biscuit and water in the tower, might, in the event of wreck occurring, prove a blessing to the castaway seaman.

We forbear from pointing out any other of the numerous dangers around our coasts, for perhaps sufficient has been said at present to awaken the sympathies of our readers to this very important subject, and induce them to appreciate the great benefits which would result to the good of humanity and the advantage of trade from the general adoption of M. Herbert's principle of construction for sea-marks.

STEAM-BOILERS AND ENGINEERING WANTS.

IF STEAM shall continue to be used as a means of securing propulsory power for maritime purposes, it cannot longer remain questionable, whether the great want of the engineering world may not be a more reliable mode of making, using, and controlling steam, for the purposes of marine propulsion. The subject of steam-boilers is one of the great and important questions of the age. There have been some fifteen different kinds of marine boilers brought into use, each one having its advocates, who are prepared to show the immense advantages of this or that peculiarly constructed boiler; and yet it is a notorious truth, that we cannot obtain a supply of steam by natural draught for ocean navigation, without occupying so much of a vessel's hold, as to reduce her capacity to a *non-paying* amount. And then the question of controlling the caloric both in furnace and steam-room becomes at once problematic. The evils of interested influence have been carried to such extent, in reference to the different kinds of steam-boilers, that engineers are actually afraid of each other; and it would seem that there is not a single engineer who dare come out and demonstrate to the world which is the safest, and at the same time most economical, marine steam-boiler, both in reference to space and fuel. Some are in the habit of throwing the responsibility of making choice of the best kind of boiler upon the owner of the vessel, without themselves first determining which is the best, openly and above board, lest they should give offence to the several rival builders and inventors or candidates for the public patronage. This principle of irresponsibility and favoritism has been carried so far, that it has become an alarming evil, and demands immediate rebuke. It must be exposed in its full extent, lest more disastrous results ensue. Marine engineers have a vast responsibility resting upon them. Why is it that boilers are so large and unwieldy, filled up with flues, or misplaced tubes, and topped off with steam chimneys? Is it because these kinds of boiler are the most efficient, *or because all are made by the pound, and weigh more when made of this or that peculiar stamp?* Or is it from short-sighted views of building engineers? Such gentlemen should remember that all which tend to cheapen the cost of fuel, weight and space, as well as the reduction of everlasting and costly repairs, which so often cause ruinous delays, compelling vessels in some cases to proceed to sea in a dangerous and unprofitable state, are drawbacks on steam, and tend to make this agent unpopular. It is very generally conceded, that the late R. L. Stevens, however many blunders he made in nautical mechanism, and however limited his knowledge of adapted shape for vessels, that he was an engineer of more than ordinary merit. He had no steam-chimneys to the boilers of his steam-vessels. The late explosion of the Empire State, shows conclusively that they are no advantage as it regards safety against explosion. Unless some more efficient means is adopted of *shouldering responsibility*, we are not likely, very soon, to se rapid construction of steam-vessels of any kind, until ship-owners more familiar with engineering, and are able to judge for themse

NAUTICAL INVENTION.—WRECKS—ALARMS.

MR. RUFUS PORTER, of Washington, has matured a nautical invention, which gives promise of extraordinary utility in preventing shipwrecks and marine disasters on our coasts, and which combines so much simplicity with manifest utility, that the wonder is, that it has been overlooked so long. The invention consists of a loud whistle, or series of whistles, attached to the head of a hollow vertical cylinder, to be adjusted and secured upon dangerous points of our coast, or over reefs, shoals, and submarine rocks, for the purpose of being operated by the undulation of the waves or swells of the sea, and at the swell of every wave sending forth sounds similar to the shrill steam-whistle of locomotive engines, thus giving notice to mariners of the location of danger. These sonorific indicators may be easily erected, and permanently be secured, so as to withstand the most furious breakers, or resist the force of floating ice, and may be shielded from storms of sleet or snow.

Different indicators will produce different sounds, so that the special point of danger will be recognized by the peculiar sounds, even in the darkest night, or in the densest fogs.

Some of these whistles will give sounds by the force of small waves of two inches in height, while others, which require more force to blow them, will be loud enough to be heard a distance of three miles; and so simple is the apparatus, that in some locations the expense will not exceed twenty dollars.

The inventor has taken measures to procure letters patent for this invention, and is about to erect one of the sonorific beacons near the arsenal in Washington, and expects its sound to be heard in the Capital, a distance of over a mile. The opinion has been expressed by an old ship-master, that one-half of the marine disasters which occur on our coasts would be prevented by a judicious distribution and arrangement of the sonorific beacon.

We copy the above from the Merchants' Magazine.

"But so far from endorsing it as useful and advantageous, we regard it as one of the most dangerous appliances that could well be introduced. Better have no sea-marks, than have such as will deceive the mariner, and leave him in doubt and fear.

"It is a notorious truth, that almost every sound under certain circumstances may be echoed, and this is one of that class of sounds. It is also true, that these sounds are not to be used in the open sea, but in the vicinity of rocks, reefs or shoals, where the waves are less regular; and the slope of the wave is always consequent, to a very great extent, upon the direction of the wind, which will always keep the echo moving, and render it very difficult to determine which of the two was the correct one. Water being a good conductor of sound, the echo would be the continual dread of mariners, if such mode of sea-marks were adopted."

Our own experience assures us of this fact, and philosophy teaches the same, and as friends of humanity, we say, avoid an unstable sea-mark.—[EDS.

FAST STEAMBOAT TIME ON THE WESTERN RIVERS.

THE first steamboat that ran on the Western waters, was built in 1811, by Fulton & Livingston, at their ship-yard, established at Pittsburg. The wheel was applied at the stern, and two masts were stepped for the use of canvas, to aid in the propulsion. The boat was an experimental one, and was named the *Orleans*, of 100 tons burthen. In 1812 she made the voyage to New-Orleans in 14 days, and afterwards ran as a packet between that city and Natchez. The first steamboat that ever ascended the stream of the Mississippi, was the fourth one launched on the Ohio; and the second, built by D. French, at Brownsville, and named the *Enterprise*, of 75 tons. In 1814 she descended to New-Orleans, and after serving General Jackson in his defence of that city, in 1815 she undertook, and completed the return voyage to Pittsburg, reaching Louisville in 25 days. At the time of this trip, the waters of the Mississippi were high, and consequently she was enabled to avoid the current, where any existed, and made her way through "cut-offs," and over inundated fields, in still water.

From that time till the present, the history of the steamboat shows an improvement in speed and utility, which is equalled only by the progress of civilization and the development of the Mississippi valley, so greatly indebted to this once marvellous invention.

The voyage of the *Enterprise*, as is usually the case with first experiments, failed to convince the public of the practicability of ascending the Mississippi when that river was confined within its banks, and its current sweeping downward at a rate due to a descent of four inches in the mile. It was reserved to the steamboat *Washington*, Capt. Shreve, to demonstrate by a second voyage of 25 days from New-Orleans to Louisville, that steamboats could ascend this river in at least one-fourth the time required by the barges and keel-boats hitherto in exclusive use. At a public dinner given to Capt. Shreve on his return to Louisville, he predicted that the time would come when his twenty-five day voyage would be made in *ten*—a feat which, no doubt, his audience considered "visionary" on his part, but which has since been performed in *four days* and *nine hours*. Capt. Shreve introduced some of the most valuable steamboat improvements of his day, and, like a" men inspired by mechanical genius, he had faith in the germs of art wh lay concealed in the womb of time. It might with truth and pertine rendered an adage, that the man uninspired by faith is incapable of w that men devoid of mechanical ability most loudly decry the predictio mechanics, and deny the possibilities of progress.

The following are a few of the best steamboat performances on the Western rivers, commencing with the *Enterprise* and *Washington*.

The improvement in speed is due to the perfection attained in tl node and machinery, and to the increasing magnitude of the boats, w h grown from 75 to 1,100 tons.

From New-Orleans to Louisville.—Distance 1480 Miles.

					Days.	Hours.	Minutes.
May,	1815.	Steamer	Enterprise	made the trip in	25	2	40
April,	1817.	"	Washington	"	25		
September,	"	"	Shelby	"	20	4	20
May,	1819.	"	Paragon	"	18	10	
November,	1828.	"	Tecumseh	"	8	4	
April,	1834.	"	Tuscarora	"	7	16	
November,	1837.	"	General Brown	"	6	22	
"	"	"	Randolph	"	6	22	
"	"	"	Empress	"	6	17	
December,	"	"	Sultana	"	6	15	
April,	1840.	"	Edward Shippen	"	5	14	
"	1842.	"	Belle of the West	"	6	14	
"	1843.	"	Duke of Orleans	"	5	23	
"	1844.	"	Sultana	"	5	12	
May,	1849.	"	Bostona	"	5	8	
June,	1851.	"	Belle Key	"	4	23	
May,	1852.	"	Reindeer	"	4	20	45
"	"	"	Eclipse	"	4	18	
"	1853.	"	A. L. Shotwell	"	4	10	20
"	"	"	Eclipse	"	4	9	30

This last is the quickest time on record. The water was low and the current swift, which, with other obstacles she encountered, entitles the *Eclipse* to the honor of the fastest boat on the western rivers. Her average speed was fourteen miles an hour against the stream.

From New-Orleans, to St. Louis.—Distance 1200 Miles.

1840. Steamer J. M. White made the trip in 3d. 23h.

From New-Orleans to Cairo, Mouth of the Ohio River.—Distance 1000 Miles.

					Days.	Hours.	Minutes.
May,	1853.	Steamer	Eclipse	made the trip in	3	4	4
"	"	"	A. L. Shotwell	"	3	3	40

From New-Orleans to Natchez.—Distance 300 Miles.

					Days.	Hours.	Minutes.
May,	1814.	Steamer	Orleans	made the trip in	6	6	40
July,		"	Comet	"	5	10	
May,	1814.	"	Enterprise	"	4	11	20
April,	1817.	"	Washington	"	4		
September,	"	"	Shelby	"	3	20	
May,	1819.	"	Paragon	"	3	8	
November,	1828.	"	Tecumseh	"	3	1	20
April,	1834.	"	Tuscarora	"	1	21	
August,	1838.	"	Natchez	"	1	17	
"	1840.	"	Edward Shippen	"	1	8	
"	1842.	"	Belle of the West	"	1	18	
"	1844.	"	Old Sultana	"		19	45
"	1851.	"	Magnolia	"		19	50

May,	1853.	Steamer	A. L. Shotwell	made the trip in	19	49
"	"	"	Southern Belle	"	20	3
"	"	"	Princess, No. 4	"	20	26
"	"	"	Eclipse	"	19	47
August,	1855.	"	New Princess	"	18	53
"	"	"	New Natchez	"	17	30

FROM LOUISVILLE TO CINCINNATI.—DISTANCE 150 MILES.

				Days.	Hours.	Minutes.
1818.	Steamer	General Pike	made the trip in	1	16	
1819.	"	Paragon	"	1	14	20
1822.	"	Wheeling Packet	"	1	10	
1837.	"	Moselle	"		12	
1843.	"	Duke of Orleans	"		12	
"	"	Congress	"		12	20
1846.	"	Ben. Franklin, No. 6	"		11	45
1852.	"	Alleghany	"		10	38
"	"	Pittsburgh	"		10	23
1853.	"	Telegraph, No. 3	"		9	52

FROM LOUISVILLE TO ST. LOUIS.—DISTANCE 750 MILES.

1843.	Steamer	Congress	made the trip in	49 hours.
1854.	"	Pike	"	47 "
"	"	Northerner	"	46½ "
1855.	"	Southerner	"	43 "

FROM ST. LOUIS TO ALTON.—DISTANCE 25 MILES.

1853. Steamer Altona made the trip in 1 hour and 25 minutes.

FROM ST. LOUIS TO ST. JOSEPH, (MO. RIVER).—DISTANCE 590 MILES.

1853. Steamer Polar Star made the trip in 64 hours.

FROM CINCINNATI TO PITTSBURGH.—DISTANCE 480 MILES.

1850.	Steamer	Telegraph, No. 2,	made the trip in	41 hours
1851.	"	Buckeye State	"	40 "
1852.	"	Pittsburgh	"	39 "

The oldest Steamboat Company in the United States, or the world, is the U. S. Mail Line between Cincinnati, Louisville, and St. Louis. It was organized in 1818, and continued ever since, improving the boats of the line every year by the addition of new ones. It is said that this Company built the first steamer designed *exclusively* for passengers. She was named the "Gen. Pike," and made her trips between Louisville and Cincinnati in (8 thirty-one hours—a passage now performed by the Company's boats in *or ten hours.*

Eighteen miles an hour is about the maximum of speed yet attai the Western rivers. Eight hundred and sixteen steamboats are em on the Mississippi River and its tributaries, the total tonnage of amounts to 326,443 tons, besides 2,300 barges and flat-boats. T value of steamboats now annually afloat is estimated at $20,000, the commerce at $200,000,000.

SCREW PROPULSION FOR CLIPPER SHIPS.

THE exploration and trade of California, through the medium of which the clipper ship era was introduced, will not soon be forgotten by the commercial minds of the Atlantic States. This trade gave rise to a flood-tide of prosperity, which, like a favorable trade wind, was sought by all to waft them onward to the goal of success, through the channels of commerce, on a more advanced scale; and while it furnished new fields for the labors of genius, enterprise and industry, it added to the stability of the national currency, and became the Eldorado of the Western World. This, however, like most other enterprises within the orbit of nautical commerce which have proved successful, was extended for the time being beyond the immediate and healthful demands of legitimate and present want; and, as a consequence, the supply *in the present crude state of nautical science* exceeded the demand, and clipper ships have since languished in the bazaars of commerce. That peculiar type of model has been changed, and the properly denominated clipper ship is now no longer placed on the stocks, while *the too hasty conclusion was arrived at*, that they must of necessity be less profitable than the more sluggish, but more capacious vessel; unmindful that the capacity might be greatly increased, while the same rate of speed was maintained, and that they were the precursors of a trade which must at no distant day circumnavigate the globe. The gleaming of that day is breaking upon the horizon, the influence of the clipper ship era having awakened a spirit of enterprise in the Old World, that will continue to seek an extension in the New, only commensurate with the widening influence of commerce itself, which, like a tide wave returning to its native shore, comes back laden with expectation for the future. The following question has again and again been propounded to us,—what shall be done with clipper ships to render them profitable? and without giving us time to appropriate, or an opportunity to map out the result of our investigations, we have been pressed for a solution to the problem. We are, however, now ready to say to our friends of this fraternity, that we have worked out a solution, and are prepared to answer the question so frequently proposed, not only with satisfaction to ourselves, but scarcely less so to those who may have clipper ships *of proper and suitable type* unprofitably employed. And, indeed, we may go further, and add to the list those engaged in a trade which of all others is the most revolting to humanity, although not yet proscribed by law, and though as yet only known by the term Coolie, is but another type of the *slave trade*, against which the civilized world has so significantly hurled its anathemas. But enough of this. A proposal was made by the people of Europe several years since to establish a line of large steamers between Austria and the United States, but various difficulties prevented the execution of the project; among these the deferential duties on American products was the most pro-

minent; and although these have remained unchanged until the present time, the exertions of foreign merchants have been untiring, until this barrier has at length been removed, and now the merchants and manufacturers of Austria are anxiously seeking an exchange of products with the United States, and are desirous of extending the channel of their trade; their market is thus thrown open directly to American commerce and to foreign competition. Another, and the only remaining difficulty having the least prominence to a greater and more profitable trade than any other enjoyed by the United States, is want of connection between Vienna and Trieste. This connection is in an advanced state of progression, and will be complete by means of a railroad which is about being finished. Thus we discover that the people of Europe themselves have removed the barriers which have prevented the induction of one of the greatest commercial enterprises in which this country has ever been engaged. The whole network of German, Italian, Austrian, and French railroads may be thus brought to bear on the American trade on a fair scale of competition, in which enterprises Americans have never yet come off second best.

THE U. S. STEAMER NIAGARA.

[From the Journal of the Franklin Institute.]

In the July number of the Journal, I gave my impressions of this war steamer, and regretted that for her vast size externally, she was so deficient in accommodation and armament within. My remarks were made with the best feeling for all concerned in her construction, and while I acknowledged her beauty of outline, speed, &c., I also mentioned what I considered defects arising from a want of experience in that particular branch of ship-building.

My remarks have attracted the attention of the *Editors of the Nautical Magazine*, not from any merit they possess, but from the position they occupy in this *Journal*, a courtesy for which I should thank them, and I will endeavor to make myself more fully understood. The *Niagara* is longer and wider than the other five steamers, and when complete will have about the same draught of water. She will then represent 4,750 tons measurement, 12 11-inch guns, and 23 feet of draught of water; while each of the others will represent 3,500 tons measurement, 40 guns from 10 down to 8-inch bore, and 23 feet draught of water. In a naval engagement, the armament of the latter ships is every way superior to that of the *Niagara*, while the former would have the advantage in attacking a fortification, as her guns are of larger bore, and have a longer range; but any one who has visited the other steamers will at once have seen that they could easily carry the *Niagara's* armament on their spar-deck, without touching the gun-deck battery of 8 inch guns. The Ordnance Bureau have armed these ships differently, for reasons which I have no doubt are satisfactory.

To say that it requires a ship of 4,750 tons, drawing 23 feet of water, to carry 12 11-inch guns, is absurd; and the *Editors of the Nautical Magazine* have, since the issue of their first number, written pages on this very subject, viz: the importance of having moderate sized *light draught* vessels carrying heavy guns; and I have no doubt but the senior editor of that *Journal* could, without difficulty, design a vessel of 2,375 tons that shall carry the same armament, and not exceed 18 feet draught of water. They state that Mr. Steers was required to adapt his model to a certain amount of power. This is incorrect; his model and plans were made before the Board of Engineers met at Washington; he informed them that he could spare 100 feet in length of his vessel by the whole width, and they acting on this information, gave her 50 per cent. more power than the other ships, intending for her bunks to hold 900 tons of coal. Since the ship has been launched, this space of 100 feet has been encroached upon to make room for other stores, and my original statement that she was externally large, and internally small, is true. She might and should have had three, instead of two decks. In my former article I stated that before a person could properly design a naval vessel, he must first know what they required. To this remark, the *Editors of the Nautical Journal* object, and they assert that private constructors ought, and do know best what models are most appropriate for naval purposes. I consider it no discredit to the private constructors of the country to say that I do not believe that there is one of them sufficiently acquainted with naval affairs to say how many square feet of deck room, how many cubic feet of capacity, or how many tons of displacement are required for a given armament (the armament regulating the crew, the crew the stores, &c.) The old maxim, that *experience teaches all things*, is as true here as elsewhere; and the *Editors of the Nautical Magazine* would themselves find if they ever make the trial, that they have something to learn even on that subject. A word in conclusion; the constructors of the Navy are gentlemen regularly brought up to their business, and as such are entitled to the respect of those in the profession. To charge that everything done under their superintendence is badly done, that their models are bad, their workmanship defective, and by implication that they know nothing about their business, is not, in my opinion, a proper construction of the golden rule; and while it may answer for a *Naval Journal*, it will not, I trust, find many followers. FULTON.

We had determined to remain passive and give but a passing notice to the new war steamers, as they progress, or to speak only in general terms, until they had shown themselves to the world on their trial trips; hence the reason of confining our remarks chiefly to the Merrimac; and but for the one-sided and seemingly interested statements of contributors to other journals, we should have strictly adhered to our determination. But inasmuch as Fulton and his endorser Fair-play have set us down as entirely wanting in knowledge of the positive requirements of a war vessel, we shall not only throw off our obligation, in reference to time, but throw down the glove to Fulton, and all the interested endorsers he can ever muster both in and out of the Navy to disprove our position; at the same time pledging ourselves to furnish them with a reasonable amount of space in the pages of this Journal, to sustain themselves, and to disprove our own; the only ob-

ligation we shall require on their part will be, that they shall divest their articles of all metaphysical abstractions, and confine themselves to the general issue in the principles of construction as set forth in our published articles. We have already pledged ourselves, that when Fulton would come forward with his friend, we would show that it was a more difficult matter to model and construct a merchant ship, on the true principles of science, than that of a war steamer. We are still ready to do as we proposed. But with regard to the Niagara, we have neither condemned or yet approved her size, or battery, but will place the matter in its true light. The Bureau of Construction set down the draught of water of the new steamers at 23 feet; this was determined on, before Mr. Steers had been consulted, and it only remained for him to confine himself to this limited draught. He exhibited the models of three different sized vessels; the department exercising the prerogative of choosing either one of the plans or models offered, or rejecting them all. Even the Ordnance Department were consulted in this matter before the model with its corresponding and determined dimensions were decided upon, and the only question then was, whether thes hip would be able to carry the enormous battery, weighing some two hundred and seventy tons. The Secretary of the Navy, as well as the Ordnance Department, were well pleased with the model. The idea of having a battery which could be used in all weathers was well received, and approved on the oft-repeated condition, that the ship would be able to carry twelve eleven-inch guns on her spar-deck. It was not supposed at the time that the vessel would be deficient in battery; the only fear expressed was that she would have too much. So much, then, for the endorsement of the model and size of the vessel, with her battery and draught of water; and now we ask who is to blame [if there be any] for the size of the vessel and her battery—provided she is able to carry it, and provided her draught of water does not exceed 23 feet? Certainly it is not Mr. Steers. We next come to the power for propulsion. Mr. Steers suggested that if he could be allowed to name the power, and select the engineer to put it in, he could name a speed for the vessel, with this given amount of power beyond what had been expected by the Department; the same to occupy a space not exceeding 100 feet of length. This proposal was not accepted, and the matter was left in the hands of the Bureau of Construction to furnish the power. Mr. Steers then proposed to give the vessel the *same battery as the other five steamers*, and only the proportionate increase of power demanded by the difference of size, maintaining the 23 feet draught; yet the heavy spar-deck battery was preferred, and the control of power maintained, with the size, mode of applying and unshipping propeller; and notwithstanding it was shown that speed always demanded increased power—the power assigned is nearly one-third less than the amount proposed by Mr. Steers; yet 97½ feet was appropriated in obtaining it, and still there are bunkers for 920 to 950 tons of coal. In view of these facts, will any one say that Mr. Steers has

had any thing to do with *the amount of power, the kind of propeller, and the mode of unshipping it?* The description of the propeller, with the size, and mode of application, were determined on arbitrarily by the Bureau of Construction—these were *imported in advance.* As to the amount of power, the model and plans were made with direct reference to engines, boilers, and propeller, furnished by a private engineer. How then could Mr. Steers be responsible in any way for the amount of power, and what reference could this have to proportions of power he had no hand in furnishing? The engines or power proposed were designed for adaptation to that specific model;—how then can Fulton write understandingly when he departs from these truths. And if 100 feet allowed for the engines and boilers have been encroached on, it was not because there was not room enough in the ship, but because of *the extravagance of engineers*, in first appropriating more than a just proportion to the power, and next, in their expanded desires for an unnecessarily large engine room. Mr. Steers told the Board of Engineers that he could spare 100 feet very well; that was what his plans and power called for; but are they to expect 100 feet with little more than two-thirds of the power?—and yet they have managed to obtain 97½ feet with this great reduction of power, and still she has space for 920 to 950 tons of coal, being more than was bargained for. As for the number of decks to which Fulton alludes, we have only to say, that fearing there might be a disposition at some distant day to enlarge her battery, Mr. Steers adapted her decks and sides to the wants of a gun-deck, so that if it was deemed necessary, her spar-deck battery could be reduced in weight, and a gun-deck battery be mounted, by simply cutting ports in the sides; in which case her gun-deck battery could be worked more free from smoke, by the increased height between decks, which so greatly embarrass the gunners in time of action, that after the first few broadsides they can scarcely discern the object at which they are supposed to aim. Strange that the enlarged "experience" of constructors and engineers had not thought of this. But in addition to this, it was assumed that the ship was to be managed by persons who maintain and prefer the erect position when they can obtain a sufficient amount of space to secure it; hence, comfort and health was regarded as of some consequence in the distribution of space between decks. *Would the writer man a war vessel with baboons to go on their all-fours, as some of our war vessels ought to be, if their space between decks is considered?* Can Fulton himself, or his friend Fair-play, stand erect between decks under the beams of any of the five steamers? How narrow-minded it is, to suppose that a ship should be a less comfortable dwelling than a house, when the means are at hand for making her such.

If experience is so valuable, why was not the sum total of the Navy employed in modelling these five ships?—then we should have five different models, and risk less of having them all failures. With regard to the varie-

ty of opinions of constructors, we will only remark, that in reference to the Niagara, while some not only thought but openly said that she would break in two, others insisted that she would draw too much water; while in general terms she was set down as a failure. It seems that naval constructors have yet to learn that longitudinally sharp vessels can be made stronger than the bluff-ended vessels, with which our Navy abounds.

It is indeed most surprising, that no one comes forward to sustain the irresponsibility of our naval constructors and engineers—and yet the writer tells us that experience is the grand palladium of success in naval construction. Where did he secure so large an amount? He tells us that we shall find, were we to design a naval vessel, that we have some things to learn, that the naval constructors are gentlemen, and that he wrote with the best of feeling, etc. Now, in reply to all this nonsense, we have only to say, that while the writer in one sentence tells us that we have some things to learn, and in another he thinks that we could even do better than the present effort in the five vessels, that he thinks we could furnish 2375 tons of a war steamer on 18 feet draught. Has Fulton been taught the first lesson in mechanical philosophy, which is this, that *no one knows more than what they learn.* We have learned all we know, and expect to learn a great deal more; and the chief difficulty with him is, that he refuses to learn, and this is the sole cause of his ignorance upon naval matters. If experience is worth anything to a naval constructor, then we say, that they should be the best repairers of old vessels in the country, for they have done more of that kind of work, and less designing and building, than any private builders. We ourselves, although private builders, have modelled more naval vessels than any of our naval constructors, with perhaps three exceptions; but this was not done during our fifteen years of naval service; it was done since we have been recognized as a private builder for other governments. Some of our best constructors have never built a war vessel, and the very best we have, has modelled but three. Then why harp about experience when our naval constructors have the least amount, or less than private builders. Would not Fulton have been better employed, considering that [experience is so valuable,] in telling the public *how many engineers and boiler makers were employed* in secretly altering the Merrimac's boilers while she lay in this harbor, so as to secure a sufficient amount of draught to enable her to make a little more steam while on her "satisfactory trial trip?" Does not common sense teach him, that if experience is so valuable, that his may be worth more in the line of his profession, than in writing about that which he knows nothing; and would not this advice be worth something, if he would learn to take advantage of that experience that is valuable to every body else but himself? Why did he not, from his fund of "experience," counsel the Bureau about the folly of using metal bearings for propeller journals before, instead of after, they had been used. As little as we know of engineering, we had learned that

wood was best before these vessels were built. If experience is so valuable, why has he left the line of his profession, in which he is accredited with having a good degree of knowledge, acquired by "experience in those things he has learned?" He tells us the constructors are gentlemen; is this a part of the amount we have to learn? Alas, for him, we had learned this fact perhaps before he knew it. He, too, like his endorser Fair-play, might have learned in his own neighborhood that we were better acquainted with the naval constructors than he himself was. We could not have been very apt scholars if, in twelve to fifteen years of naval service, we had not learned this at least. Fulton need give himself no uneasiness about the constructors; they are gentlemen, and will be so regarded by us. In addition to this, they have all passed their guardianship, and are permitted to speak for themselves; and although their experience in naval construction is much less than that of some private builders, yet they may also have some things to learn, which a private builder could perhaps teach.

In conclusion, we say, that we are not, as journalists, the supporters of any man or ship, no farther than they are right, as we have learned to understand it. If the Ordnance Department would now alter the battery of the Niagara, let them take the responsibility. They first preferred the present plans—let them be finished, and try the ship. If she comes within the draught of water, sustains the battery, sails fast, works well, is comfortable, then Mr. Steers is free from censure; then the ship will have been shown to be nearer right in coming up to the mark of her design, than any of the six. The Merrimac is now drawing 23 feet 9 inches, and she has not her complement either of guns or shot. Had she all on board that belongs to her complete out-fit, she would draw over 24 feet. There is but little fear, but that the Niagara will have all that belongs to her put on board, and it will be well if she has no more. How unfair it would be to now change the battery of the Niagara, and throw the blame on Mr. Steers. The ship is adapted to the battery of the other five ships, and if need be, can be made even more formidable, on less draught of water. What draught of water did Fulton set down for the five steamers when he said they could carry the Niagara battery on their decks? If they draw one foot more water than was designed with less than their own armament, how much more than the proper draught would they draw with the Niagara's battery—will Fulton tell us? He thinks our course may do for a Naval Journal. We tell him that it does—our readers with few exceptions think so too; but unfortunately for him, his hopes that others will not think as we do are futile. Truth is mighty, and our readers know it; they duly appreciate our remarks on the inefficiency and irresponsibility of our Navy. Even the personnel of the Navy responds in gratitude for an independent nautical, naval, and engineering press.

Our subscription list is fast increasing. We, too, are grateful; we have many friends; among them some are naval constructors and engineers, ship-builders, owners, captains, etc., and last but not least, we hope to continue *Fulton and Fairplay* on the same list. Do they object?

PROCEEDINGS OF THE BOARD OF MARINE INSPECTORS OF THE ASSOCIATION OF LAKE UNDERWRITERS, HELD AT BUFFALO, AUGUST, 1856.

By the politeness of the Secretary of the Lake Board of Underwriters, we have been favored with the following Rules, Specifications* and Suggestions, relative to the Construction, Classification and Navigation of Sail Vessels and Propellers on the Lakes, which were unanimously adopted:

Rules, &c., Relative to the Construction of Sail Vessels and Propellers to Class A 1.—All the timber used must be of good quality, and free from sap and other defects.

Frames.—The parts of each frame must be either bolted or treenailed together, and the laps in vessels of 200 tons and upwards, shall not to be less than two feet, six inches, and joints well fitted. Each frame to be secured to the keel by two bolts, one through the floor and keel, the other through the keelson floor and keel.

Sister Keelsons, Bilge Strakes.—Vessels above 150 tons to have sister keelsons, well bolted, and all vessels to have bilge strakes; the collective breadth of the latter to be equal to one-eighth the vessel's beam, and every strake must have one through bolt, and one blunt bolt, exclusive of spikes, in each frame.

Transom.—The main transom to have a knee at each end to connect it with the side of the vessel.

Breast Hooks.—There must be one breast hook for every four feet of the depth of hold, and to have at least three through bolts in each arm.

Arches.—Vessels of 250 tons and upwards must be arched, or have *thick ceiling*, edge bolted, with a bolt between every frame from bilge strakes to deck clamps; the breadth of the arch to be equal to one-fourth of the depth of hold. Each strake of the arch must have one through bolt and one blunt bolt in every frame, exclusive of sufficient spikes.

Clamps.—The collective breadth of deck clamps to be equal to one-fifth of the depth of hold. In every clamp strake of seven inches in breadth there shall be one through bolt; above seven, two through bolts; above fourteen, three through bolts; and above twenty-one inches, four through bolts in every frame, exclusive of spikes, to be driven from the outside, and clenched on a ring or washer. The joints in clamp strakes to be scarfed, and the length of scarf must not be less than four times the breadth of the strake so scarfed.

Ceiling.—Ceiling to be square fastened with spikes, for every foot in breadth; and in the *thick ceiling* there must be a through bolt at every foot from bilge strake to clamp in each alternate frame. The ceiling, either in the bottom or sides, may be diminished in thickness towards the ends of the vessel.

* The Board takes pleasure in acknowledging valuable assistance from several eminent ship-builders and others in interest, belonging to Buffalo and other places on the Lakes, who, on a general invitation, came forward, and cheerfully assisted in the work.

OUTSIDE PLANK.—In all vessels the bottom plank, ten inches wide and under, to be square fastened with spikes; and over ten inches to be fastened in proportion; but the plank on the side, under eight inches wide, to be square fastened, and above that width to be fastened in proportion.

In the planking and ceiling, no butts to be nearer than five feet of each other, unless there is a strake wrought between them, and then a distance of four feet will be allowed, and no butts to be on the same timber, unless there be two strakes between them.

BUTT BOLTS.—Vessels of 200 tons and upwards, must be butt bolted with a bolt through the next timber to the butt, and clenched.

BEAM FASTENINGS.—The deck frame may be either with or without carlins. When without carlins it must be secured to the side by one lodging-knee to every beam, and one diagonal or hanging-knee to every alternate beam. Or a shelf piece may be used instead of the lodging-knees, to be jogged up to beams one-fourth of its thickness, fastened with a through bolt in every frame; and the beams bolted thereto with at least two bolts in every beam. The deck frame, where carlins are used, must be secured by two lodging and one diagonal or hanging-knee to every beam end, or the shelf piece may be substituted for the lodging-knees as before mentioned. Partner beams, in all cases, to have diagonal or hanging-knees. Vessels not exceeding 150 tons, are exempted from using diagonal or hanging-knees, provided their beams are well secured to the side by a heavy *shelf piece*, or a *stringer*, bolted in the same manner.

KNEES.—The siding of knees to be three-fourths the thickness of the beam they secure, and to have a bolt at every ten inches; the bolts in the arms must be through bolts.

CENTRE BOARD.—The head ledges to centre board cases, in vessels of 300 tons register, shall not be less than 7 × 10 inches; the centre board six inches thick; the plank for the case not less than six inches thick, secured with edge bolts of one inch iron, not more than two feet apart, each bolt to pass to the centre of third strake of each bolting; the ends of the plank to be secured with ¾ bolts, eight inches apart, driven through and clenched on each side, and to have not less than four stay rods on each side of case, of 1¼ inch iron, running through the deck beams and bottom of vessel, and set up with the screw. The first and second bolting of sides of case to pass through the keel and pocket piece and clenched. The head ledges to be secured by four one inch bolts at the lower ends, passing through the pocket piece and keel, and one through the keelson and clenched, the upper ends to be securely fastened to the beams. The keelson, alongside the pocket-piece, to be 7 × 16 inches, and to extend sixteen feet forward and abaft the case, and be secured with four three-quarter bolts in each frame, and one seven-eight bolt between the frames into pocket-piece. All vessels, under or over 300 tons, shall have their centre boxes built in proper proportion to the above rule.

DEAD RISE.—All sailing vessels hereafter built, entitled to Class A 1, shall have not less than 1¼ inches per foot dead rise, measuring from centre of keel out, one-third of breadth of beam; and all vessels with less dead rise shall have bilge limbers and proper bilge pumps to entitle them to Class A 2.

CHAIN PLATES.—Vessels of 300 tons shall have chain plates $3 \times \frac{5}{8}$ inches, flat iron, or two parts of 1 inch, round iron, secured to the hull, with 1¼ inch bolts and backers, eight inches long, secured with 1 inch bolts, and larger or smaller vessels in proportion.

MAST STEPS.—Mast steps are best fitted across the keelson, but however fitted, they must be well and securely bolted; and the mast partners must be double-kneed.

LIMBERS.—In vessels of 300 tons, limbers to be 1¾ by 3½ inches—in larger or smaller vessels to be in proportion—and limber chains to be provided in all steamers and propellers; and the Board would recommend their general adoption in sailing vessels.

COVERING BOARD.—The joints in the covering board and rail to be scarfed the length of scarf, not to be less than four times the breadth.

PUMPS.—All vessels to have at least two good pumps, exclusive of bilge pumps; pumps to be cased, and in those whose bulk-head forward does not come down to the skin, one pump must be cased not less than three by two feet, to receive the suction pipe of steam pump in case of accident.

SALTING.—All vessels hereafter built, and otherwise entitled to be classed A 1, must be salted, and the stops shall not be less from the covering board than one-fifth of the depth of the hold.

WATER TIGHT BULK-HEADS, &c.—It is earnestly recommended that all steam vessels have two or more water tight bulk-heads, from skin to deck, with accessable slides to limbers—one to be forward of the freight hold; and that all sail vessels have one or more water tight bulk-heads and slides to limbers—one to be the forecastle bulk-head. It is also strongly urged on masters and owners of vessels carrying grain in bulk, to use good and sufficient *shifting boards*, it being the opinion of this Board, that without them, a vessel is not really seaworthy.

It is also the opinion of this Board of Inspectors that steam ve gating the lakes, should be fitted with sufficient sails to control t of accident to the engine. They would also suggest that bett taken to secure the hatchways and other openings in the de vessels, and more especially of propellers, as it is believed that serious disasters occurring, are in consequence of some of the ab deficiencies, and from being overloaded.

CLASSIFICATION OF LAKE VESSELS.—There shall be three C and C—with two grades to each class, namely: A 1, A 2, C 2.

Vessels hereafter built in accordance with the Rules of the Association, shall be entitled to Class A 1 five years. At the expiration of which time, if sound, and in good order, she shall Class A 2, three years; B 1, two years; B 2, two years, and then into Class C.

New vessels, classing A 2, shall be entitled to remain in that grade five years, B 1 three years, B 2 two years, and then into Class C. At any time, however, vessels are liable to be surveyed, and if from any cause whatever, such as stranding, collision, dry rot, or deficiencies in material, &c., a vessel be found unworthy to remain in her class, the inspector for the district shall place her in the grade to which she is entitled.

But if the damage or deficiencies be promptly made good to the satisfaction of the inspector, the vessel shall remain in her class, until in due course of time she lapses from it.

New vessels that are not qualified to class so high as A 2, shall be classed in the grade to which it is deemed by the inspector they are entitled.

Vessels already built shall have the benefit of the foregoing Rules according to their merits—time to be reckoned from the date of launching.

Vessels rebuilt, or having received extensive repairs, shall have the benefit thereof by their grade being continued or raised; but in no case shall any vessel be continued in the A 1 grade longer than five years, or be raised to that grade after that age.

Vessels built superior to the Rules of the Association, shall be entitled to a *star* on the register, in addition to the A 1 Class—thus, *A 1.

Vessels built of iron, if of proper thickness and strength, well fastened, and divided into three or more water tight compartments, shall be entitled to class A 1, ten years; A 2, six years; B 1, four years; B 2, four years, and then into Class C. Subject always to the same exceptions and rules as govern the classification of sail vessels and propellers constructed of wood.

(See Tables annexed.).

MEMORANDUM.

[Extracts from Rules of the Association.]

LAKE INSURANCE—HULL RATES FOR SAIL VESSELS.

FOR THE SEASON.	A 1.	A 2.	B 1.	B 2.	C 1.	C 2.
Less than 200 tons ...6	per ct.	$6\frac{1}{2}$ per c.	7 per c.	$8\frac{1}{2}$ per c.	10 per c.	11 per c.
From 200 to 300 " 7	per ct.	$7\frac{1}{2}$ per c.	8 per c.	9 per c.	11 per c.	12 per c.
From 300 to 400 " 8	per ct.	$8\frac{1}{2}$ per c.	9 per c.	10 per c.	12 per c.	15 per c.
Upwards of 400 " ....$8\frac{1}{2}$	per ct.	9 per c.	10 per c.	12 per c.	15 per c.	20 per c.

For the year add $\frac{1}{2}$ per cent. to the above rates.

Vessels in the lumber trade on the east shore and ports of Lake Michigan (Grand Traverse Bay excepted,) and east shore of Lake Huron, to pay 2 per cent. additional.

Lumber vessels loading off the west shore of Lake Michigan, (Green Bay excepted,) and west shore of Lake Huron, to pay 1 per cent. additional.

HULL RATES FOR STEAM VESSELS.

FOR THE SEASON.	A.	B.	C.
Less than 400 tons	8 per cent.	9 per cent.	15 per cent.
Over 400 and less than 600 tons	9 per cent.	10 per cent.	17 per cent.
Over 600 tons	10 per cent.	11 per cent.	20 per cent.

For the year add 1 per cent. to above rates.

For passenger and mail steamers and first class propellers, navigating Lake Ontario only, to Ogdensburgh, deduct 10 per cent. from above rates.

SHORT RATES TO NOVEMBER 30TH.

April having expired, deduct from above rates	10 per cent.
May having expired, deduct from above rates	20 per cent.
June having expired, deduct from above rates	25 per cent.
July having expired, deduct from above rates	30 per cent.
Aug. having expired, deduct from above rates	35 per cent.
Sept. having expired, deduct from above rates	45 per cent.
Oct. having expired, deduct from above rates	55 per cent.

Sailing season from April 1st, noon, to November 30th, noon, on Lakes Michigan, Huron, St. Clair, Erie, Ontario, and River St. Lawrence, to Montreal.

Hull risks on Lake Superior to terminate November 20th.

The maximum proportion of Insurance on hulls, shall be *two-thirds* of the valuation on vessels valued at $5,000 and under, *three-fourths* on vessels valued over $5,000 and less than $12,000; and *four-fifths* on vessels valued at $12,000 and over.

Rates of particular average on Vessels classed A 1 and 2	Not less than 5 per ct.
Rates of particular average on Vessels classed B 1 and 2	Not less than 7 per ct.
Rates of particular average on Vessels classed C 1 and 2	Not less than 10 per ct.

PRODUCE CARGO RATES.

Shipped on A 1 Vessels	deduct 5 per cent. from standard rates.
Shipped on A 2 Vessels	charge standard rate.
Shipped on B 1 Vessels	charge same rate.
Shipped on B 2 Vessels	add 5 per cent. to standard rate.
Shipped on C 1 Vessels	add 10 per cent. to standard rate.

Fire Insurance for the winter on yearly hull policies, covers the equipments on board the vessel only—if removed, an additional premium to be charged thereon.

No vessel shall load with railroad iron, pig metal, stone, ores or marble, wholly, beyond her registered or American Custom House tonnage measurement; but if half, or less than half of her tonnage be laden with above articles, her lading shall not exceed her tonnage more than twenty per cent., or, if Canadian measurement, fifty per cent.

United States Custom House Rule for Measuring and Calculating Tonnage of Single-decked Vessels.

MEASUREMENT.

Length, from forward side of stem, to after side of stern-post, on deck.

Breadth of beam, at outside of plank in the widest part of vessel.

Depth of hold, from ceiling alongside the main keelson, to under side of deck plank.

RULE FOR CALCULATING.

Deduct $\frac{3}{5}$ of breadth of beam from the length, multiply that product by the breadth of beam, and that by the depth of hold, and divide by 95.

Canadian measurement on our common *sail* vessels on the Lakes, is about $\frac{1}{5}$ less than the American measurement.

Description of Timber and Plank allowed to be used in various parts of Lake Sail Vessels and Propellers to class A 1.

Floor Timbers—White oak, rock elm, black birch.

Top Timbers—White oak, or chestnut, tamarack, red cedar, alternately with white oak.

Transom and Knight Heads—White oak.

Keel—White oak, hickory, rock elm, black birch, beech, hard maple.

Stem, Stern-Post, Keelson, Centre Board Case—White oak.

Beams—White oak, chestnut, tamarack, red pine, yellow pine.

Breast Hooks and Knees—White oak, tamarack, pine.

Plank from Keel to Light Water Mark—White oak, beech, rock elm, black birch.

Plank from Light Water Mark to Gunwale and Covering Board—White oak.

Ceiling from Keelson to Bilge Strakes—White oak, tamarack.

Bilge Strakes, Clamps, Shelf Piece—White oak.

Ceiling from Bilge Strakes to Clamp—White oak, tamarack, red pine, yelow pine.

A Table of minimum dimensions of Timber to be used in building Sail Vessels and Propellers, to A 1.

Tonnage	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
Keel sided	8	9	10	11	11½	12	12½	13	13½	14	14¼	14¼	14½	14½	14½	14¾	14¾	15	15	15½
Keel moulded	6	7	8	8½	9	9½	9¾	10¼	10¾	11¼	11½	11½	11¾	11¾	11¾	12	12	12½	12½	12½
Stem and stern post	8	9	9½	10	10½	11	11½	12	12½	13	13½	13½	13½	14	14	14	14	14½	14½	14½
Floors sided	7	8	9	9	10	10½	11	11	11½	11½	12	12	12½	12½	13	13	13½	13½	14	14
Frames moulded at centre	9	9½	10	10½	11	12	12¼	12½	12¾	13	13¼	13½	13¾	14	14¼	14½	14¾	14¾	15¼	15½
Frames moulded at bilge	7	7½	8	8½	9	9½	9¾	10	10¼	10½	10¾	11	11¼	11½	11½	11¾	11¾	11¾	12	12
Frames moulded at head	4	5	5	5½	5½	6	6	6¼	6¼	6½	6½	6¾	6¾	7	7	7¼	7¼	7½	7½	7½
Distance between centres	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
Main keelson, sided and moulded	9	10	11	12	13½	13	13½	14	14½	15	15¼	15¼	15½	15½	15¾	15¾	15¾	16	16	16
Sister keelsons, sided and moulded				9	9	10	10	10½	10½	11	11	11	11	11½	11½	11½	11½	12	12	12
Main transom, sided	9	11	12	13	14	15	15	16	16	17	17	17	18	18	18	19	19	19	20	20
Main transom, moulded	7	9	10	10	11	11	12	12	13	13	13	14	14	14	15	15	15	16	16	16
Beams, sided	8	9	9	10	10	10	11	11	11	11	12	12	12	12	13	13	13	13	14	14
Beams, moulded at centre	5	6	6	7	7	7	8	8	8	9	9	9	9	10	10	10	11	11	11	11
Space between beams	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Space where a carlin is used	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Scarfs of keel, in feet and inches	4.	4.3	4.6	4.9	5.	5.3	5.6	5.9	6.	6.3	6.6	6.9	7.	7.3	7.6	7.9	8.	8.3	8.6	8.9
Scarfs of keelson, in ft. and inches	4.6	4.9	5.	5.3	5.6	5.9	6.	6.3	6.6	6.9	7.	7.3	7.6	7.9	8.	8.3	8.6	8.9	9.	9.3

A Table of the minimum thickness of the outside Plank of Sail Vessels and Propellers, to Class A 1.

Tonnage	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
From keel to bilge	2	2	2½	2½	2½	3	3	3	3	3½	3½	3½	3½	3½	4	4	4	4	4	4
From bilge up the side	2½	2½	3	3	3	3½	3½	3½	3½	4	4	4	4	4	4½	4½	4½	4½	4½	4½
Covering board and rail	3	3	3	4	4	4	5	5	5	5	5	5	5	5	6	6	6	6	6	6
Deck	2	2	2½	2½	3	3	3	3	3	3	3	3	3	3½	3½	3½	3½	3½	3½	3½
Breadth of waterway when used	9	10	10	11	11	12	12	13	13	14	14	15	15	15	16	16	16	17	17	17
Thickness of waterway	5	5	6	6	6	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8
Covering board where waterway is used	2	2	2	2½	2½	2½	3	3	3	3	3	3	3	3	4	4	4	4	4	4

A Table of the minimum thickness of the Inside Plank of Sail Vessels and Propellers, to class A 1.

Tonnage	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	100
Ceiling from keelson to bilge	2	2	2	2	2½	2½	2½	2½	2½	3	3	3	3	3	3½	3½	3½	3½	3½	3½
Bilge strakes	2½	3	4½	4	4	5	5	5	5	5	5	6	6	6	6	7	7	7	7	7
Ceiling from bilge to clamp	2	2	2½	2½	2½	3	3	3	3	3	3½	3½	3½	3½	3½	3½	4	4	4	4
Deck clamps	2½	3	3	3	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6
Ceiling from bilge to clamp when no arch is used	2½	2½	3	3	3½	4	4	4	5	5	5	5	5	5	6	6	6	6	6	6
Thickness of arches					3	3	3	3	3	3	3	3½	3½	3½	3½	3½	4	4	4	4
Breadth of shelf piece	10	11	11	12	12	13	13	14	14	15	15	16	16	16	17	17	17	18	18	18
Thickness of shelf piece	4	4	5	5	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7

A Table of minimum sizes of Fastenings to be used in Sail Vessels and Propellers, to class A 1.

Tonnage	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
Heel knee, stemson, deadwood, (bolts,)	3/4	3/4	7/8	7/8	7/8	7/8	7/8	1	1	1	1	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4	1 1/4	1 1/4
Scarfs of keel, arms of hooks, pointers, riders, &c.	1/2	1/2	5/8	5/8	3/4	3/4	3/4	3/4	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8
Keelson, transom, throats of hooks	3/4	3/4	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	1	1	1	1	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8
Clamps, knees, beams	5/8	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8	1	1	1	1	1
Waterway and shelf piece, (when used,)	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8	1	1	1	1	1	1	1
Bilge strakes	1/2	1/2	5/8	5/8	5/8	3/4	3/4	3/4	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8
Butt Bolts				5/8	5/8	5/8	5/8	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Number of bolts in scarfs of keel	5	5	5	5	6	6	6	6	7	7	7	7	8	8	8	8	9	9	9	9

The length of Spikes must be double the thickness of the plank they fasten, and one inch added. All *through* bolts must be driven from the outside, and clinched on the inside.

A Table of minimum sizes of Chains and weight of Anchors, adapted to the tonnage of Lake Sail Vessels.

Tonnage	10	20	30	40	60	80	100	120	140	170	200	250	300	350	400
Best Bower Chain	3-8	7-16	1-2	9-16	5-8	11-16	3-4	13-16	7-8	15-16	1	1 1-16	1 1-8	1 3-16	1 1-4
Best Bower Anchor	90	112	168	224	336	392	532	616	700	784	952	1176	1400	1456	1680
Small Bower Chain			5-16	3-8	7-16	1-2	9-16	5-8	11-16	3-4	13-16	7-8	15-16	1	1 1-16
Small Bower Anchor			80	90	112	168	224	336	392	532	616	700	784	952	1176
Hawser								4 1-2	4 3-4	5	5 1-4	5 1-2	5 3-4	6	6 1-4
Kedge Anchor								100	125	150	175	200	225	250	275

Tonnage	450	500	550	600	650	700	760	800	900	1000	1100	1200
Best Bower Chain	1 5-16	1 5-16	1 3-8	1 3-8	1 7-16	1 7-16	1 1-2	1 1-2	1 9-16	1 5-8	1 11-16	1 3-4
Best Bower Anchor	1904	1904	2072	2072	2240	2240	2352	2352	2800	3360	3920	4200
Small Bower Chain	1 1-16	1 1-8	1 1-8	1 3-16	1 3-16	1 1-4	1 1-4	1 5-16	1 3-8	1 7-16	1 1-2	1 9-16
Small Bower Anchor	1176	1400	1400	1456	1456	1680	1680	1904	2072	2240	2352	2800
Hawser	6 1-4	6 1-2	6 1-2	6 3-4	6 3-4	7	7	7 1-4	7 1-4	7 1-2	7 1-2	7 1-2
Kedge Anchor	300	325	350	375	400	425	450	475	475	500	500	525

Length of each chain to be 75 fathoms; length of hawser to be 60 fathoms.

Steamboats and Propellers, above 200 tons, employed on the Lakes, may have chains 2-16 smaller than Sail Vessels, and anchors in proportion.

Steamboats and Propellers, above 200 tons, employed wholly on the Rivers, may have chains 4-16 smaller than Sailing Vessels, and anchors in proportion.

D. P. DOBBINS, *Secretary.*

A Table of the minimum thickness of the Inside Plank of Sail Vessels and Propellers, to class A 1.

Tonnage	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	100
Ceiling from keelson to bilge	2	2	2	2	2½	2½	2½	2½	2½	3	3	3	3	3	3½	3½	3½	3½	3½	3½
Bilge strakes	2½	3	4½	4	4	5	5	5	5	5	5	6	6	6	6	7	7	7	7	7
Ceiling from bilge to clamp	2	2	2½	2½	2½	3	3	3	3	3	3½	3½	3½	3½	3½	3½	4	4	4	4
Deck clamps	2½	3	3	3	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6
Ceiling from bilge to clamp when no arch is used	2½	2½	3	3	3½	4	4	4	5	5	5	5	5	5	6	6	6	6	6	6
Thickness of arches					3	3	3	3	3	3	3	3½	3½	3½	3½	3½	4	4	4	4
Breadth of shelf piece	10	11	11	12	12	13	13	14	14	15	15	16	16	16	17	17	17	18	18	18
Thickness of shelf piece	4	4	5	5	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7

A Table of minimum sizes of Fastenings to be used in Sail Vessels and Propellers, to class A 1.

Tonnage	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
Heel knee, stemson, deadwood, (bolts,)	¾	¾	⅞	⅞	⅞	⅞	⅞	1	1	1	1	1⅛	1⅛	1⅛	1⅛	1⅛	1¼	1¼	1¼	1¼
Scarfs of keel, arms of hooks, pointers, riders, &c.	½	½	⅝	⅝	¾	¾	¾	¾	¾	¾	¾	⅞	⅞	⅞	⅞	⅞	⅞	⅞	⅞	⅞
Keelson, transom, throats of hooks	¾	¾	¾	¾	¾	⅞	⅞	⅞	⅞	⅞	⅞	1	1	1	1	1⅛	1⅛	1⅛	1⅛	1⅛
Clamps, knees, beams	⅝	⅝	⅝	⅝	¾	¾	¾	⅞	⅞	⅞	⅞	⅞	⅞	⅞	⅞	1	1	1	1	1
Waterway and shelf piece, (when used,)	⅝	⅝	⅝	¾	¾	¾	⅞	⅞	⅞	⅞	⅞	⅞	⅞	1	1	1	1	1	1	1
Bilge strakes	½	½	⅝	⅝	⅝	¾	¾	¾	¾	¾	¾	⅞	⅞	⅞	⅞	⅞	⅞	⅞	⅞	⅞
Butt Bolts				⅝	⅝	⅝	⅝	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
Number of bolts in scarfs of keel	5	5	5	5	6	6	6	6	7	7	7	7	8	8	8	8	9	9	9	9

The length of Spikes must be double the thickness of the plank they fasten, and one inch added. All *through* bolts must be driven from the outside, and clinched on the inside.

A Table of minimum sizes of Chains and weight of Anchors, adapted to the tonnage of Lake Sail Vessels.

Tonnage	10	20	30	40	60	80	100	120	140	170	200	250	300	350	400
Best Bower Chain	3-8	7-16	1-2	9-16	5-8	11-16	3-4	13-16	7-8	15-16	1	1 1-16	1 1-8	1 3-16	1 1-4
Best Bower Anchor	90	112	168	224	336	392	532	616	700	784	952	1176	1400	1456	1680
Small Bower Chain			5-16	3-8	7-16	1-2	9-16	5-8	11-16	3-4	13-16	7-8	15-16	1	1 1-16
Small Bower Anchor			80	90	112	168	224	336	392	532	616	700	784	952	1176
Hawser								4 1-2	4 3-4	5	5 1-4	5 1-2	5 3-4	6	6 1-4
Kedge Anchor								100	125	150	175	200	225	250	275

Tonnage	450	500	550	600	650	700	760	800	900	1000	1100	1200
Best Bower Chain	1 5-16	1 5-16	1 3-8	1 3-8	1 7-16	1 7-16	1 1-2	1 1-2	1 9-16	1 5-8	1 11-16	1 3-4
Best Bower Anchor	1904	1904	2072	2072	2240	2240	2352	2352	2800	3360	3920	4200
Small Bower Chain	1 1-16	1 1-8	1 1-8	1 3-16	1 3-16	1 1-4	1 1-4	1 5-16	1 3-8	1 7-16	1 1-2	1 9-16
Small Bower Anchor	1176	1400	1400	1456	1456	1680	1680	1904	2072	2240	2352	2800
Hawser	6 1-4	6 1-2	6 1-2	6 3-4	6 3-4	7	7	7 1-4	7 1-4	7 1-2	7 1-2	7 1-2
Kedge Anchor	300	325	350	375	400	425	450	475	475	500	500	525

Length of each chain to be 75 fathoms; length of hawser to be 60 fathoms.

Steamboats and Propellers, above 200 tons, employed on the Lakes, may have chains 2-16 smaller than Sail Vessels, and anchors in proportion.

Steamboats and Propellers, above 200 tons, employed wholly on the Rivers, may have chains 4-16 smaller than Sailing Vessels, and anchors in proportion.

D. P. DOBBINS, *Secretary.*

Fig. 1.

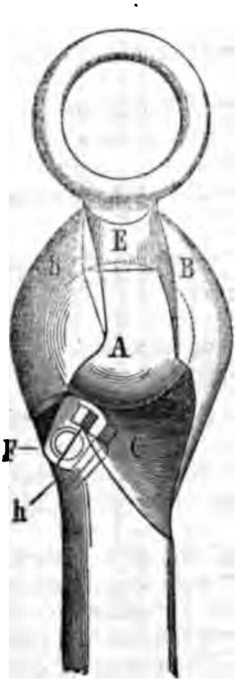


Fig. 2.

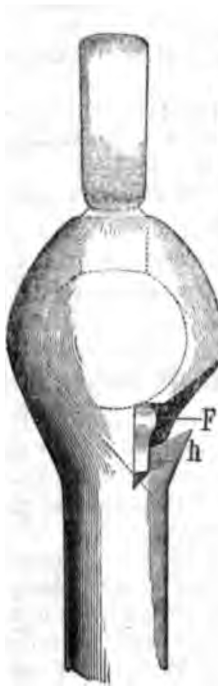


Fig. 3.

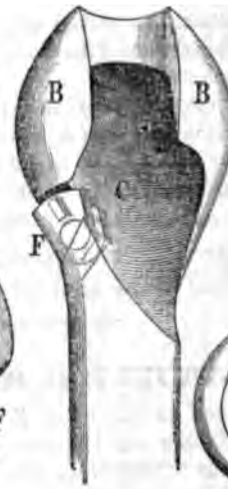
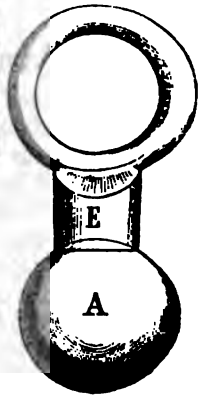


Fig. 4.



BROOKES' IMPROVED ATTACHMENT FOR BOATS.

Brookes' improvements for attaching boats within tackles. Patented August 5th, 1856.

This contrivance presents the following advantages :—

With it, the boat is more readily hooked on, and is not liable to be unhooked by a sea sinking her bottom in hoisting up.

It is in itself a swivel, and takes out all turns that may be in the tackle when hooked on hastily.

It will unhook the moment the boat takes the water if required. Yet is perfectly under control; and accidental re-attachment is impossible.

These advantages result in rapidity of execution and increased safety.

Every one knows what difficulty is encountered in hooking on, and in unhooking, with the ordinary arrangement; and that the way of the vessel must be checked, perhaps stopped. Indeed, in a sea-way, lowering is in consequence often impracticable.

Description of the Plates.

Fig. 1.—Front view.
Fig. 2.—Side view.
Fig. 3.—Bolt.

Fig. 4.—Ball, link and ring.

A.—Hollow-headed bolt fitted to the boat forward and aft, the opening forward.

B.—Ball connected with the block by the link E, fitting freely in the slot, which is curved to correspond with the curved channel C.

The curved channel causes the ball in detaching to turn off from the bolt, and prevents accidental re-attachment.

F.—Guard let into the side of the curved channel, deep enough to permit the link to play freely without turning it back, when the link turns down by the slackning of the falls, and it is not desired that the boat should be detached.

This guard is supported by the shoulder H, and as it is easily moved by hand, the moment of detachment is completely under control.

We regard Brookes' Attachments as a labour and life saving improvement, commending itself to the nauticel fraternity.—*Eds.*

[From the London Naut. Mag. and Naval Chronicle.]

THE SUEZ CANAL, AND ITS EFFECTS ON COMMERCE.

Aperire terram gentibus,—"To open the land to the people,"—is the motto of the scholar and the traveller, the soldier and the sailor, the colonist and the merchant; illustrious or obscure, this is the maxim of all, and every day the ancient barriers which shut up many fair portions of our globe, give way before our enterprise and perseverance.

Some little time ago I quoted, at the commencement of one of my works, the sublime motto of Alexander, and devoted some sentences to a commentary on it, firmly convinced of this great principle, that the riches and civilization of the world are in direct accordance with the respective mutual relations of its people. Thus man by himself is rude, the inhabitants of confined cities are little more than barbarous; while those of empires are civilized. Europe has only become great since the rest of the world has been open to her resources. Europe inherited by Rome from time immemorial became one day the imitator of her glory and her wisdom; like a phœnix she rose from her ashes, and was born anew. The intellect of man then became free, was made common to all by the press; the routes to America and India were then discovered by Columbus, and by that great captain for whom Camoens speaks:

> "Sou da forte Europa bellicosa
> Busco as terras do India tão famosa."

Former ages had beheld no such revolution; but since its accomplishment Europe, accelerating her progress until then imperceptible, has advanced with a still increasing rapidity, the law of which may almost be compared with that of falling bodies. Thus steam and electricity have rendered us masters of distance and time, and by means of railroads the continent is again becoming a frequented district of the globe.

On reflection, however, it is perceived that the traveller alone can follow these costly paths, and that commerce, in general restrained by economy, will require always thousands of vessels on the ocean, and is satisfied with the gratuitous impetus afforded by the winds.

To cut through the Isthmus of Suez or Panama would be to open shorter and less dangerous routes for the navigator, to reduce the expense of trade, and to extend commerce by facilitating it;—to increase the welfare and

riches of all, to bring nations together, and thus to contribute the greatness of one to the civilization of another. Such is one of the undertakings reserved for the second half of this century, already so remarkable:—an era which this great work alone would render celebrated.

Of the two projected canals, that of America and that of Suez, the importance is very different. The canal of Suez would unite India and Europe. It would re-establish the commerce and prosperity, the peace and advancement of Europe, Asia, and even Africa; in a word, of the whole of this hemisphere, the continental superficies of which, compared with that of the opposite, being in the proportion of 23 to 11. To Mr. Ferdinand de Lesseps was reserved the honor of attaching his name to this great enterprise, authorized and patronized by the viceroy of Egypt, Mohammed Said. Happy in being able to praise one of the chief men of Egypt with regard to this new triumph of civilization, I rejoice still more in being able to devote a few lines to the consideration of the questions presented by the opening of a channel between the two seas.

If we compare the mean distances between the ports of Europe and India, by the Cape of Good Hope on the one hand, and by the intended channel between the two seas on the other, we shall find an enormous difference in favor of this latter route. This difference will be still greater if we remember that a straight line on the chart of navigation is far from being the shortest distances from one port to another, and the seaman can only reach the point for which he is steering by following a certain number of successive courses approaching as near as possible the arc of a great circle. Thus, far from making directly for the Cape of Good Hope, vessels leaving Europe or the Atlantic ports of North America, en route for India, must steer for the Canaries or Azores, in order to find the trade-winds of the northern hemisphere, to make the coast of Brazil and sight Cape Frio, or put into harbor at Rio Janeiro. This is generally the route for the Cape of Good Hope, more justly perhaps called the Cape of Storms. They then cross the Agulhas Bank, reach Bourbon or Mauritius, and from thence steer for India, following the routes allowed by the monsoons. Vessels in the Mediterranean again have to contend with still greater disadvantages. It often takes them fifteen days to reach the Straits of Gibraltar, westerly winds generally prevailing in this quarter, where we also find a rapid flow of the ocean waters into the Mediterranean. Thus the voyages to India take at least five months or five months and a half; the voyages home being rather more direct without being sensibly shorter. Ships can then run nearer to the African shore, by reason of the trade-winds of the southern hemisphere; the place of call in this case being St. Helena.

I have myself taken both these routes about ten years since. If we now examine the facilities for navigation in the three seas near the canal of Suez, namely, the Mediterranean, the Red Sea, and the Gulf of Oman, we find,—

That in the Mediterranean the winds blow from the North during the greater part of the year, change to S.E. in the spring, and return to the North, passing by the W. and N.W.

That nearly the same takes place in the Red Sea, where the North, which is the prevailing wind, heaps the waters in the direction of Babel Mandel, so that during a calm we observe a current setting Northward, evidently arising from the elevated waters in the South endeavoring to recover their level. Southerly winds generally succeed a calm.

The Gulf of Oman has two monsoons, the N.E. monsoon, which generally continues during the winter, and the S.W. monsoon, which lasts during the summer, and is frequently stormy; the change from one monsoon to the other is there, as elsewhere, accompanied by a series of storms and gales.

It appears to me from the foregoing, that it would be advantageous for vessels to proceed to India (by the canal) during the autumn, and to return by it in the spring.

The considerable reduction of the distance of European ports from those of India, would not be the only advantage to trade from adopting the canal between the two seas; for not only would vessels reach their point of destination much sooner, but they would find places of anchorage throughout the entire route, and also, what is of more importance still, they would meet with good markets. The navigator, after having followed the usual easy routes of the Mediterranean, would dispose of part of his cargo in the canal of Suez or at Djedda, would purchase ivory at Massarva, Souaken, or Berbera, which he would exchange in India for opium, to take to China in exchange for silk and tea. He would complete his home cargo in colonial merchandize from Manilla, the Isles of Sunda, and Ceylon, in cotton of India or Egypt, in coffee of Abyssinia or Yemen, the gum of Soudan or Hedjaz, the corn of lower Egypt, or rice of Damietta; and these numerous operations, which now require years, would be accomplished rapidly and without danger with small capital and small vessels. In short, by reducing the time necessary for the operations of commerce, we reduce the general expense. We make a greater number of these changes feasible in a given time, and facilitate them to small traders, who are by far the most numerous. By affording an easier and surer route to navigation we find it may be accomplished by vessels of small tonnage, provided with bills of exchange; in short, it opens the route to India to coasting vessels, and renders commerce and navigation general. Turkey, Russia, Austria, Italy, and Southern Spain, might then fit out vessels for India, and these powers would find their maritime resources increase in immense proportion. Marseilles would become more important, and the ports on the ocean, Cadiz, Lisbon, Havre, Rotterdam, Hamburg, would increase their shipping, like England suddenly brought near its powerful colony, like Spain and Holland with respect to Manilla and Batavia: in short, the increase of trade competition on the one hand, and the vast diminution of expense on the other, would doubtless tend to lessen the rates of exchange. The produce of Asia would abound in our markets; the Asiatic markets would, in their turn, be rich in ours; and the general good would be the necessary result.

Considering the advantage arising from the opening of the Suez canal, the different countries brought into connection by means of it might be divided into six classes, three on the East and three on the West side of it.

In the West:—

1st.—The countries bordering the Mediterranean.

2nd.—The Atlantic countries of Europe.

3rd.—The Atlantic states of North America.

In the East:—

1st.—The countries bordering the Red Sea.

2nd.—Those countries bordered by the Indian Ocean.

3rd.—Eastern Asia and the isles of the ocean.

It is evident that the ports of the Mediterranean and the Red Sea, are those which would profit most by the opening of the canal.

The Atlantic, Europe, and Southern Asia, namely, Maskate, Bassora, the whole of India, the Burman Empire, as well as Eastern Africa, namely, Zanzibar, Mozambique, and Madagascar, have a great interest in seeing the canal of Suez opened. In fact, that part of North America bordering on the Atlantic and the Gulf of Mexico on the one hand, Cochin China, China, Japan, the Molucca and Sunda Islands, Australia, and New Zealand on the other, would come under the third class. It would be very advantageous to take the canal in the passage from New-York, for example, to Canton or Batavia.

All nations would take advantage of the importance of the trade with India, China, and the islands of the ocean. Trade with the Red Sea, although less considerable, deserve attention; but as there is scarcely any carried on at present, it is very little known; and could only acquire importance by the opening of a canal between the two seas. The Red Sea, which is so near to us in a straight line, becomes far distant when we have to double the Cape. Babel Mandel is as far from us as Pondicherry, and Souaken as far as Batavia; Suez, further still, by this route, becomes as near as Beyrout by the canal; in short, the two routes measured from the Straits of Gibraltar to Souaken, are in the proportion of one to five.

Very few European vessels are now met with in the Red Sea; every year we see a few belonging to the Parsees of Bombay, and manned by Lascars; the internal trade of this sea is now carried on by Arabian barks, called *dows* or *boutres*, constructed at Suez, Djedda, Kosseir, Souaken, or Mocha, with wood from India or Singapore. These vessels are of a very small tonnage, are very sharp, and have a handsome sheer; a heavy poop, which hinders their working, and lowers it at the stern; they carry one mast, rigging, a square sail; this sail and its yard are struck to the foot of the mast when they lay-to; about thirty men are required to hoist it again, and this operation cannot be performed in less than half an hour; the tacking of these ships is as difficult as it is dangerous. The *dows* only sail in the day time; they get under way about seven o'clock in the morning, sail till about four in sight of the coast, then anchor by a grappling iron, or run aground on the sand.

When they have to cross the Red Sea, the Arabs take the precaution of sailing from a port to windward of the one they are steering for, on the opposite coast; the voyage occupies sixty hours, and is always a time of great anxiety to the masters of these vessels. These masters, called *nakhouda*, (from a Persian word,) pretend to take observations with astrolabes of great antiquity, although this pretension does not appear to me to be proved. I must add, that we rarely find a compass on board these *dows*; the classic compass of the Arabs only consists of a needle, more or less magnetic, resting on a cork, which floats in some water, and hence we need not be astonished that one-fifth of the dows are lost every year.

The sailing of the dows is by no means good. I have myself passed forty-five days in two of these vessels: namely, fifteen days in going from Souaken to Djedda, (about sixty nautical leagues,) and thirty days in going from Djedda to Kosseir (scarcely one hundred and thirty nautical leagues). It is true that the wind was against us, and one half of this time was employed in beating to windward, sometimes still less. There is a great difference between these dows and our vessels: thus we may suppose that the in-

troduction of European vessels into the Red Sea by the canal of Suez would cause a complete revolution even in the internal commerce of this sea.

The ports of the Red Sea would carry on commerce in coffee, gum, ivory, and such produce as senna, wax, ostrich feathers, &c., which I quote from memory. At Djedda they would take away a cargo of gum; at Souaken gum and ivory; at Mocha, coffee; at Massawa, as well as Tadjuira, Zeyla, Berbera, situated in the Gulf cf Aden, gum, ivory, and coffee.

If there is not now a considerable trade in the gum, coffee, and ivory of the Red Sea, it must be attributed to the distance that separates us from the Red Sea by the Cape of Good Hope. The great powers whose vessels double the Cape, namely, Great Britain, France, Spain, and Holland, have colonies elsewhere, and do not require to supply themselves from this coast, at least with regard to coffee; but if the canal of Suez were opened, Greece, Turkey, Russia, Austria, and Italy, who have no colonies to supply them, would derive a great advantage in getting coffee from the Red Sea. Of all countries producing coffee, Abyssinia would be the nearest to the Mediterranean, Europe, and particularly to its two eastern peninsulas, Greece and Italy, and the two seas bordering Russia and Austria. The Lesser Antilles are nearly as far from the Straits of Gibraltar as from Abyssinia; the Greater Antilles are more distant, as well as Brazil; as for Ceylon and the Islands of Sunda, they can only be reached by the Red Sea. The cultivation of sugar also appears throughout most of the colonies to be more and more substituted for that of coffee, less perhaps on account of the privileges granted by some of the states to colonial sugars, than by reason of the enormous increase in the consumption of sugar and alcohols, an increase which is caused by the extension of the metropolitan sugar trade.

Abyssinia, the port of which is Massawa, (a Turkish possession), might furnish a coffee of a superior quality at a reasonable price, and in great abundance. This coffee, which is little known in Europe, is sold there by the name of Mocha coffee; the port of Mocha, indeed, is scarcely ever visited by European vessels, the coffee being much dearer than at Massawa. It is true that this is of rather a finer quality; Turkey, Egypt, and even Venice, consume in small quantities. Capt. Jehenne, known as the author of some good hydrographical works, visited the ports of the Red Sea and the Gulf of Aden about twelve years since. M. Perville, a distinguished botanist attached to this expedition, published an interesting account of the productions of Yemen, and particularly that of coffee. (This account was inserted in the *Annales Maritimes.*) A few Europeans already resort to Abyssinia, and we have reason to hope that the opening of a canal between the two seas would draw a greater number from this part, and we should find extensive plantations formed there under the protection of the European powers, with the consent of the local authorities, on a fertile soil, the working of which would cost but little, and the produce of which would be very extensive.

Abyssinia, inhabited by a Christian population, would receive emigrants from Europe; she would thus acquire a taste for our produce, the investment of which would possess a certain importance in this part, especially with regard to fabrics, arms, and ammunition, hardware and glass-ware, employed in trade in the interior; I think that an inferior quality of brandy would also find a ready sale in this country.

Every year European vessels would transport a considerable number of

pilgrims from Massawa to Jaffa, on their way to Jerusalem. The Abyssinian devotee of the present day braves the greatest danger and undergoes the utmost fatigue to visit the tomb of our Saviour. His pride and fanaticism suffer greatly on board the vessels of the Red Sea, manned by Mussulmen; and the journey from Suez to Jerusalem through the Mussulman countries. This pilgrimage, little frequented at present, would increase considerably if favoured by European vessels, and I even think that it would be advantageous for a company to bring steamers into the Red Sea, which would transport Christian pilgrims to Jerusalem during one part of the year, and Mussulman from Medina and Mecca during the other.

The Mussulman pilgrims might be taken from Constantinople, Smyrna, Beyrout, Tangier, Algiers, Tunis, and Cairo, Yembo, and Djedda. The pilgrims from the Mediterranean amount to at least 30,000 or 40,000 a year; we may calculate that the caravans of Damas and Cairo would contain together about 5,000, and the vessels of Suez and Kosseir would transport at a reduced rate an equal number, the remainder would take their passage on board the European vessels, and go by way of the canal between the two seas.

Massawa now consumes but little European produce: and Souaken never receives anything from Europe except ammunition for trading, hardware, English cotton-stuffs, and Austrian glass-ware, for exchange on the White River.

Medina, the port of which is Yembo, Djedda, and especially Mecca, are large cities, where we find more refinement and luxury than in most Mussulman towns. The strangers, who resort thither from all parts of the world at the time of pilgrimage, circulate a great deal of money. These cities are, however, situated in the centre of an arid country, and are deprived of all industry, and are obliged at these times to obtain their articles of consumption elsewhere. Corn is sent from Egypt by Suez and Kosseir. A great portion of this corn would pass by the Suez canal. European or Turkish fabrics are also sent, and these would hereafter follow by the canal. This merchandise consists of cottons, linens, silks, ready-made clothing, guns and muskets, of Austrian make, hardware, pottery, oil, potted butter, wax, candles, sugar from Egypt, soap from Syria, brandy from Chio or Egypt. In the holy cities there is an immense consumption of this last article. I may here observe, that the people of Medina and Mecca are sadly irreligious, although they live by religion.

The towns in Hedjaz also consume a great quantity of Indian produce.

I have mentioned Souaken as being able to furnish gum and ivory. This port already sends a certain quantity to Djedda, where the merchandise receives its ultimate destination; gum and ivory are sent to Souaken from Kartoum and the Egyptian Soudan. I will now make a few observations on Soudan, and the Egyptian Soudan in particular.

The name of Soudan (Nigritia) is given by the Arabs to a region of Africa South of the 16½ deg. N. latitude, extending from Senegal to Abyssinia, and being larger on the South than on the North side of the equator. The North and South limits of this region are marked by the rains, which fall from May to October in that part of the Soudan situated North of the equator; and from November to May in the other hemisphere. These rains never reach beyond 16½ deg. N. lat.; North of this parallel those arid deserts commence—the desert of Sahara and the Lybian desert, which, near the Mediterranean, bound those barbarous kingdoms subject to the winter rains, and are intersected on the East by the fertilizing course of the Nile.

The Soudan is inhabited between the 16½ deg. and the 10 deg. North latitude, by bigoted Mussulmans; and south of the 10th parallel by black idolaters who are often reduced to slavery by the former. Black Arabs inhabit the northern countries of the Soudan; we find them from all parts from Souaken to Senegal. The same division of climate is found in Arabia as in Africa, so that this peninsula, which is either arid and barren, or covered with poor pasture as far as the 16½ deg., receives abundant rains and becomes covered with a rich vegetation south of this parallel, namely, in Yemen or Arabia Felix.

The rains of the Soudan feed thousands of streams, and give rise to large rivers, lakes, and marshes, which, like the rivers, are subject to annual overflows. The moist ground, under the influence of a burning sun, becomes covered with a rich vegetation. The scattered and barbarous population cultivate only a portion of it. Immense forests are found in some parts, composed in a great measure of gum trees, amidst which elephants abound.

The trade of the Soudan is now chiefly carried on in gum and ivory; we may also add from memory, senna, ostrich feathers, hippopotamus' teeth, wax, &c. These articles are now brought to Senegal, and to all the West coasts of Africa, to Zanzibar, and some parts of the East coast of Africa. They are brought by the Africans to Mogador and Tripoli from Barbary; by Africans and Europeans to Alexandria; they are obtained second-hand by the English, Austrians, and Italians.

I have elsewhere shown that the price of these articles was very high at Senegal, on the Gambia, at the Mozambique, and Zanzibar, as well as on the shore of the Mediterranean and at Mogador, where the expense of conveyance by caravan forms another addition to their original price. I also showed, at the same time, that these articles were sold at the lowest possible price in the Egyptian Soudan. The Eastern part of the Soudan, which I visited a few years since, has become very accessible to Europeans. This region was conquered in 1821 by an Egyptian army, commanded by Mohammed Bey Defterdar; it comprises the provinces of Dongolah, Cordofan, Kartoum, Sennar, Fazogl, and Faka; we may also add a new province forming the basin of the Upper Nile.

The Egyptian Soudan is governed by a férik pasha, (a brigade general,) sent from Cairo with the title of Nokmader, (governor,) who resides at Kartoun, and by inspectors or moudhirs, one for each province.

Souaken is no longer dependent on Egypt: this port has been ceded to the Sultan, and forms part of the pachalic of Djedda.

Previous to 1850, the trade of Soudan was monopolized by the Egyptian government, a monopoly founded on the principle that the gratuitous gifts of nature belong to the sovereign; gum and senna not requiring cultivation, were therefore considered similar to the produce of quarries and mines. Since 1850 this trade has become free, and the European merchants, who for a long time only obtained it by smuggling, have been able to extend their operations.

The gum of Cordofan and Sennar is most sought after; that of Cordofan is the finest which we know of; it is found in pieces, the size of one's hand, perfectly clear; the gum of Hedjaz and Senegal is of an inferior quality. During my stay in Cordofan 100 lbs. of gum cost from 27 to 32 Egyptian piasters; it was put into skins sewn together, which were charged at three piasters the hundred weight.

Cordofan has exported nearly 36,000 cwt. in one year; it would supply a hundred times as much if the demand were a hundred times greater, only

a small portion of the gum produced being now collected. The greater part of the gum collected at Cairo, is sent to Trieste through Alexandria.

Cordofan and Sennar supply ivory for trading; it is, however, a little further southward, towards 10 deg., that elephants are found in great numbers. These animals frequent the vicinity of streams; they live singly or in families during the dry season, and unite in numerous troops, under the guidance of an old male elephant, called by the Arabs, khabir, (guide,) during the rainy or winter season.

The people of the Upper Nile can only hunt the elephant during the winter; indeed, hunting it as they do with guns, they can only attack it when alone. The merchants established in Soudan now obtain ivory on the White River. Some of these hunt, provided with good carbines; the great length of their weapons allowing them to hunt even during the winter, when they unite in herds.

Since the travels performed by M. Arnaud and Selim Effendi Bembachi, the White River has been more frequented by the vessels of Khartoum, and although the sources of this river have not yet been discovered, the study of its hydrography has made great progress; we have already sailed up the Nile to the 2d deg. N. lat; it was there that the missionary Angelo Vinco died, two years ago, a martyr both to religion and science.

We are not limited to the study of the river itself, its streams have been partly explored, and new ones discovered, which will be explored in their turn; the Saubat and Keilak (Bahar-egh-ghzal-Misselad) have been known for some years. Three other streams—the Gnok, the Miedjok, and a river not yet named—have been recently discovered on the right bank of the river, a little above the Saubat (perhaps they may be regarded as the three branches of one river.) Lastly, on the left bank, above the Keilak, M. Vayssière has recently discovered a considerable stream, called in the country Niebohr, which comes from the south, and enters the Nile by four mouths between the parallels of 7 deg. and 8 deg. N. latitude.

The Saubat, the Niebohr, and especially the Keilak, which receives on its right bank the Kouan or Apabou, are great water-courses; the Gnok and Miedjok are navigable for the barks of the natives for some distance from their mouths. All these rivers flowing through a country little cultivated, cover immense space when they overflow, while during the dry season they run slowly from the smaller streams through the marshes which they have produced.

Some commercial routes refer the basin of the Nile to more distant countries, such as the route mentioned by M. Vayssière leading from the mouths of the Niebohr to Djoukor in the country of Korek; the population of which appears to be Mussulman, belonging in all probability to Darfour.

The basin of the White Nile forms the largest market for ivory open to commerce throughout the whole of Africa. No region of the idolatrous Soudan is so approachable to Europeans as this. In other parts the merchant is obliged to supply himself second-hand, or else encounter considerable danger and fatigue in exporting the ivory into the interior; thus this lucrative trade is principally given up to the natives. The Europeans of Khartoum enjoy favours and privileges which they do not obtain elsewhere. The people inhabiting the shores of the White River have either already become subject to Egypt or have seen its standard raised. Naturally timid, they respect the Europeans as they do the Egyptians; free from fanaticism, they feel no hatred against them, and if misunderstandings, which are to be la-

mented, (one of which has cost the life of Vaudey,) have taken place, we must not seek to find their cause in faults committed by merchants, and in the deplorable spirit of rivalry which animates them; the imprudence of the one, and the weakness of the other, and the disorder and confusion resulting from them, will terminate in their loss, if we do not find some remedy. It is partly the agents of the European powers in Egypt, and partly the government of this country, whom we expect to take suitable measures with regard to this.

I think myself that the wisest method would be to give up the exclusive privilege of the White River to a company, admitting those merchants now established at Khartoum, and to confide the care of superintending the operations of the company to a European delegate, with authority to exclude merchants who had just complaints brought against them.

The Viceroy of Egypt, as the legitimate master of the Upper Nile, and acting in place of the sovereign, might erect fortified posts at the principal sources of the White River; in each of which might be placed about fifty black soldiers, under the orders of a captain. These posts might be connected by armed barks, each manned by twenty men, with orders to guard the borders of the river and to protect the vessels of the company.

Within and near the external enclosure of each fortified post the company trading with the natives might establish a counting-house and warehouse; a clerk residing there, whose business would be to exchange with the natives and receive and store the ivory, which the crafts of Khartoum would take away every year.

The caravans from Darfour take from 1,000 to 1,500 cwt. of ivory every year to Siout. If the port of Souaken were rendered more accessible to European vessels by the opening of a canal between the two seas, this ivory would probably pass through Cordofan and Khartoum, and be taken on board ship at Souaken; the freight would be much less, and this route would also be much preferred by pilgrims going to Mecca instead of the one now taken.

The caravan from Siout has of course been stopped by the abolition of the slave trade in the states of Mohammed Said. This caravan transported from 1,000 to 1,500 slaves every year, who were sold at a much higher rate at Siout than in Cordofan. The caravans from Darfour went by way of the desert as far as Siout; they might have ended their journey at Dongolah, on the Nile, but the merchants found they could sell their exhausted camels at greater advantage at Siout, as they did not require so many of these animals on their homeward journey; besides, the Sultan of Darfour, fearing an Egyptian invasion, took care to keep the route from his frontiers to Dongolah closed. This route, like those of the desert, is determined by the position of wells. The Egyptians, who are unacquainted with these wells, and who cannot, in all probability, find guides on whom they might depend, dare not attempt it. Darfour has less to fear with regard to an invasion from Cordofan.

I have shown elsewhere (see *Le Desert et le Soudan*, book v., chap. iii., th routes taken in trading) the route uniting Caube, the capital of Darfour, wi Lobeidh, capital of Cordofan. This route is traversed by caravans in teen days. Freights are taken at 75 or 80 Egyptain piasters the rahal camel load (5 cwt.)

The transport of goods from Lobeidh to Cairo costs 150 piasters the c load, and, with the necessary stoppages, occupies two months, namely,

	Piasters per Rahal.	Days.
Lobeidh to Debbé	80	15 to 18
Debbé to Dongolah, by bark	3 to 4	3
Dongolah to Wadi Nalfa, by caravan, the conveyance being rather dangerous in this part of the Nile	50	12
Wadi Nalfa to Asouan, by bark	5 to 6	8
Release of the camels in order to avoid the cataracts	3	½
Asouan to Cairo, by bark	10 to 12	15 to 20
Total	146 to 150	53½ to 61½

The transport of the same merchandize from Lobeidh to Souaken only costs at most 128 piasters per rahal, and only occupies from thirty to thirty-five days, namely,

	Piasters per Rahal.	Days.
Lobeidh to Khartoum	50 to 60	10
Khartoum to Berber, by bark	4 to 8	8 to 10
Berber to Souaken	60	12
Total	114 to 128	30 to 32

Thus the merchant who, instead of taking his gum to Cairo, transports it to Souaken, would economise greatly; and during the latter part of the dry season, the period when the gum is collected, he would be able to make two voyages for gum instead of one.

From Khartoum to Cairo there are two routes, namely,

First.	Piasters per Rahal.	Days.
Khartoum to Debbé	50 to 60	12
Debbé to Cairo	66 to 70	38½ to 43½

Second.	Piasters per Rahal.	Days.
Khartoum to Berber	4 to 8	8 to 10
Berber to Korosko, by caravan	160 to 180	15 to 20
Korosko to Asouan, by bark	3 to 4	3
Release of the camels in order to avoid cataracts	3	½
Asouan to Cairo, by bark	10 to 12	15 to 20
Total	180 to 207	41½ to 53

The first route, for different reasons, is seldom followed.

From Khartoum to Souaken, however, the carriage of a rahal only costs from 64 to 68 piasters, and the voyage occupies twenty or twenty-two days.

From this it appears to me that if the canal between the two seas were open to navigation, the whole trade of the Egyptian Soudan would pass through Souaken, and the greater part of this trade would pass through the canal.

I think I have shown that the canal between the two seas would open important markets in the Red Sea to European commerce, and render us masters of the interior of this sea.* Thus Europe would behold her commerce and power increase, while countries and people long forgotten would see the barrier melt away which has so long separated them from us.

We have only considered, and that very slightly, the smallest portion of this vast revolution. What would be the result if we were to examine all

* Provided, the merchants of the United States would allow it, by remaining idle spectators.—Eds.

its consequences?* When the canal between the two seas is opened, we may with truth say of Europe,

> "All thine shall be the subject main,
> And every shore it circles thine."

Or, again, with the Portuguese poet, who was one of the first to sail to India, "The whole of the ocean shall be subject to Europe,"

> "Ser lhe na todo o oceano obediente."

And "the Europeans soon becoming masters of the wórld will diffuse better laws,"

> "E por elles em fim de todo senhores
> Serao dadas na terra leis melhores."

CAIRO, *February 28th*, 1855.

PASSAGES OF CALIFORNIA SHIPS FROM NEW-YORK,

FROM THE COMMENCEMENT OF THE TRADE TO 1853, JANUARY 1, INCLUSIVE.

Sailed.	Name.	Where Built.	Tons.	Arrived.	Days Passage. Total.	Sailing Time.	Remarks
1850.				1850.			
Jan. 18	Sam. Russel	New-York	920	May 6	108	108	
March 14	Howqua	"	539	July 23	131	131	
April 14	Sea Witch	"	902	" 24	101	97	
May 26	Memnon	"	1,000	Sept. 27	124	124	
July 18	Celestial	"	900	Oct. 30	104	104	
" 24	Mandarin	"	775	Nov. 29	128	128	
				1851.			
Sept. 5	White Squall	"	1,119	Jan. 8	125	118	
Dec. 7	S. Appleton	East	782	April 11	125	125	
" 13	Surprise	Boston	1,261	March 19	96	96	
" 15	Sea Nymph	Baltimore	540	May 21	157	157	
1851.							
Jan. 11	Sea Serpent	Portsmouth	1,402	" 17	126	118	
" 11	B. Ira Hayne	"	450	" 18	127	127	
" 15	Eclipse	New-York	1,223	" 20	125	125	
" 30	Stag-Hound	Boston	1,535	" 25	115	111	Lost topmasts.
March 4	Gazelle	New-York	1,244	July 17	155	155	
" 12	Ino	"	895	" 24	134	134	
" 23	Architect	Baltimore	650	" 30	129	116	
" 29	Witchcraft	East	1,250	Aug. 11	135	108	
April 3	Game Cock	Boston	1,400	Oct. 5	185	12[illegible]	
" 26	Eureka	New-York	1,041	" 17	174	17[illegible]	
May 6	N. B. Palmer	"	1,490	Aug. 21	107		
June 2	Flying Cloud	Boston	1,783	" 31	90		

* Can be seen as well in America as in England.—[EDS.

Sailed.		Name.	Where Built.	Tons.	Arrived.		Days Passage. Total.	Sailing Time.	Remarks.
1851.									
July	9	Eagle	New-York	1,296	Nov.	18	132	132	
"	11	Telegraph	Boston	1,068	"	15	127	127	
"	12	Challenge	New-York	2,007	Oct.	29	109	109	
Aug.	1	Sea Witch	"	902	Nov.	20	111	111	
"	2	Typhoon	Portsmouth	1,500	"	18	108	108	
"	21	Hornet	New-York	1,426	Jan.	23	155	155	
Oct.	1	Comet	"	1,836	"	13	104	104	
"	2	Trade Wind	"	2,030	Feb.	1	122	122	
"	13	Golden Gate	"	1,349	"	5	115	115	
"	13	Wild Pigeon	Portsmouth	997	Jan.	28	107	107	
"	31	Celestial	New-York	900	Feb.	19	109	109	
Nov.	9	Sword Fish	"	1,035	"	10	93	93	
Dec.	17	Hurricane	"	1,608	April	15	120	120	
"	20	Invincible	"	1,769	"	13	115	115	
1852.									
Jan.	3	Eclipse	"	1,223	"	22	110	109	
Feb.	2	Kate Hays	Eastport	750	July	5	154	154	
"	21	Tornado	New-York	1,820	"	1	131	131	
March	2	Sea Nymph	Baltimore	537	"	4	124	124	
"	1	Stag-Hound	Boston	1,535	"	4	125	125	
"	9	Sea Serpent	Portsmouth	1,402	June	30	113	113	
"	12	Gov. Morton	Boston	1,430	July	15	125	125	
"	18	Ino	New-York	895	"	12	116	111	
April	9	White Squall	"	1,119	"		111	111	
"	14	Atalanta	Baltimore	1,289	Sept.	3	142	142	
May	8	Antelope	New-York	1,188	Oct.	10	155	155	
"	14	Flying Cloud	Boston	1,783	Sept.	6	115	115	
"	18	Gazelle	New-York	1,244	Oct.	1	136	136	
"	22	N. B. Palmer	"	1,490	Sept.	30	131	127	
June	1	Union	Baltimore	1,012	"	28	119	119	
"	1	Messenger	New-York	1,351	Oct.	3	124	124	
"	8	Racer	Portsmouth	1,600	"	19	133	133	
"	12	Grey-Hound	Baltimore	536	"	20	130	130	
"	22	Eureka	New-York	1,041	Nov.	7	138	138	
July	13	Mandarin	"	775	"	5	115	115	
"	22	Warner	East	500	Dec.	19	150	150	
Aug.	4	Son of Seas	Boston	2,421	Nov.	15	103	103	
"	12	S. Russel	New-York	920	Dec.	9	119	119	
"	13	R. B. Forbes	Boston	758	"	20	129	129	
"	22	Sea Witch	New-York	902	"	9	109	109	
"	25	Syren	Boston	1,005	"	23	120	120	

SHORT PASSAGES FROM OTHER PORTS.

Name.	Where from.	Where to.	Time.	Country.
Challenge	Canton	Deal	105	American
Surprise	do.	do.	106	do.
Chrysolite	do.	Liverpool	106	British
Stormaway	do.	Deal	109	do.

Name.	Where from.	Where to.	Time.	Country.	Sailed.	Best time in one day.	Remarks.
Race-Horse	Canton	Liverpool	125	American			
Nightingale	Shanghai	Deal	110	do.			
Challenger	do.	Liverpool	113	British			
Red Jacket	New-York	do.	13 1-24	American	3,392	413	
North'n Light	San Francisco	New-York	d. h. 75 5	do.			Built by Briggs, S. Bos'n.
Surprise	Canton	London	107				
Challenge	do.	do.	106				
Nightingale	do.	do.	99				

SHORT PASSAGES AT OTHER TIMES.

Name.	Where from.	Where to.	Time.	Greatest run.	
Sea Witch	New-York	San Fran'co	99		
Celestial	do.	do.	106		
Sam. Russel	do.	do.	109		
Son of Seas	do.	Liverpool	13 19-24	344	Wind blowing from N.

IS THE U. S. STEAMER MERRIMAC A FAILURE?

MESSRS. EDITORS:—

In the "reply" you have done me the "honor" to make in your last issue, I observe that the principal part of your argument is employed in refuting what I did not say, but which you ascribe to me.

In the first place, you remark that "Fair-Play has befogged himself by assuming that we had condemned the batteries of the five steamers, and endorsed the Niagara." Neither assumption was made in my remarks—although, after stating that I have befogged myself, you endeavor to befog your readers, by denying that you have endorsed her, and then proceeding to "endorse" her speed, her strength, her launch, and her workmanship. As to your endorsement of speed it is entirely unnecessary, as no sane man doubts, that a vessel possessing the lines of a mail steamer, and provided with 50 per cent. more power, must excel in speed the other five ships—and this is one of the least requisites of a war steamer. As to her launch, that has nothing to do with her qualities as a fighting vessel; and if it had, it is no better than that of the Wabash and Colorado. As to her workmanship, your evidence does not accord with that of other persons qualified to judge; althou it is consistent for New-Yorkers to believe, that breathing the air of] York is essential to the production of good work. It is indeed a assertion, that the workmanship of the Niagara is better than that other five vessels, and it would be worth your while to name "ou constructors," so that we may know how many of them join in opinion.

All this, however, has nothing to do with the *main question*, which refers only to the Merrimac, and (by implication) her four consorts. It is not my purpose to decry the Niagara, which will, I hope, be an honor to the Navy. Nor is it at all necessary to do so, in order to prove my position—that the Merrimac, and her consorts when completed, will not be *surpassed* by any war steamers afloat.

Again, you make me say that "an exposed outer stern-post is absolutely necessary." If you will be good enough to read again, you will find simply the assertion, (which I now reiterate), that such a stern-post is absolutely necessary, when the propeller is to be hoisted. Your superior acquaintance with the English Navy, will perhaps enable you to point out the instances where this assertion is incorrect.

I deemed it unnecessary to "show" that by comparison the Merrimac's stern post is as strong as that of an ordinary propeller, because the experience of the English Navy has shown it to be amply strong for its work, notwithstanding the reasons you allege against it.

The Honorable the Secretary of the Navy, doubtless appreciates at its proper value your desire to improve the Navy; but you should not forget that wholesale condemnation is not criticism; and that you are not taking the proper course to accomplish your end, when you endeavor to show that his subordinates are incompetent, by pronouncing his steamers failures, instead of pointing out, in a fair and impartial manner, their defects.

I have now a few words to say in reference to "*Correspondent*," who appears to be connected with you editorially, as he is permitted to see MSS. intended for your journal, in advance of their publication. I do not think his new nomenclature for boilers, will take the place of the old names. It is easier to understand what is meant, when we speak of a front and back, top and bottom, and two sides, "exclusive of the inside," (and outside). If "*Correspondent*" is an engineer, he ought to know that the same principles govern the ascent and descent of steam and water in a boiler generating steam, whether it have horizontal or vertical tubes; and he will find on calculation that Martin's boilers have as large an area for the passage of those currents as the ordinary horizontal tubular marine boiler. The best proof of the truth of this statement, is in the operation of the boilers on board the Susquehanna, Minnesota, and Wabash; the latter having performed admirably on her recent trip to New-York, made since your last number was issued. The plan "*Correspondent*" proposes, which is adopted in many English vessels, of having the furnaces alongside the tubes, is totally out of the question for war steamers, where there is great depth of hold, but where the horizontal area allowed for the machinery is very limited, and would not permit the introduction of boilers requiring twice the area of the others.

With regard to the experiments made on board the Susquehanna, I have examined the record in the *Journal of the Franklin Institute*, to which he

refers, and find that "*Correspondent*" has made some serious mis-statements. In the first place the experiments in question were not made by Mr. Merrick, but by engineers of the Navy, deputed for the purpose.

In the next place, the experiments *were* of a practical nature, and perfectly satisfactory to persons not prejudiced against Mr. Martin's boilers. They were intended, (and so stated to be), simply to ascertain the economical efficiency of these boilers under the best circumstances; and not to determine what nobody but "*Correspondent*" doubts, that the circulation of water is complete. Furthermore, although the dampers were closed, it was because if they had been open, more steam would have been made than the engines could work off at the dock. Finally, his objection to the use of fresh water only shows him to be ignorant, that when boilers are tested economically, the evaporation is always reduced to that of fresh water, by allowing for the loss in blowing.

I recommend "*Correspondent*" to post himself more thoroughly before he again discourses on boilers.

FAIR PLAY.

THE OTHER SIDE.

IT gives us pleasure to discover a disposition on the part of Fair-Play to learn something more of our new war steamers. In order that he may secure that amount of knowledge his experience fails to impart, we shall be glad to enlighten him to the extent of our ability (*upon equitable terms,*) thereby enabling our readers to judge whether we, or Fair-Play, move in the befogged or prejudiced atmosphere of naval experience. We would first inquire, whether the writer is quite sure that the Niagara has 50 per cent. more power than the other five vessels, and if so, how is it to be obtained: from the size, or arrangement of the engines, or from the boilers? Why did he undertake to befog us—why not give us the facts? But of the "requisites" of war vessels, we had supposed he was more familiar with heir requirements, than to assert that "*speed* was one of the least. To this assertion we make no reply, not deeming it necessary, and will only call the attention of our readers to the analogy of this case, to that in the *fable of the fox, who, after having lost his tail in a steel trap, harangued his associates upon the advantages of having no tail.* We have read of sour grapes before. But the Niagara is said to possess the lines of a mail steamer. How significant! Does the writer mean she is too sharp for a war steamer? If so, we will inform him that we are somewhat familiar with the lines of vessels, and that the Niagara is not as sharp as the Great Eastern steam ship, a vessel of 27,000 tons. Would he set her down as a mail vessel, because she is sharp? She, too, is English, remember. When the writer will produce some tangible evidence of sanity on such topics, we will attend to his assumpt to

the full measure of his desires. The qualities of the Niagara as a fighting vessel, were originally endorsed by the Ordnance Department of the Navy; and is that not enough? Will the writer take the responsibility of saying that the launch of the Wabash was equal to the Niagara's? Will he tell us that to spring the spar-deck beams clear of the stanchions in launching, is an indication of a good launch? But in reference to the name of a naval constructor, who thinks as we do about the workmanship of the Niagara? We may inquire what is to be done with the man who dare be independent, and tell what he thinks, though a naval constructor? Is he to be sent to Pensacola, as others have been, retired, furloughed, or dropped, from the list of constructors? We are not in the habit of betraying friends. If the writer will secure for us some guarantee, that naval constructors will not be punished for telling the truth, and will, in addition, give *us as hostages* the names of those who are as well qualified "to judge as ourselves," we will tell him of a naval constructor who has examined the work of those steamers, and pronounces the Niagara to be decidedly the best. But in order to accommodate "Fair-Play" to the full extent of our ability, we will add, that if he will come to the Brooklyn Navy Yard, where the Wabash and Niagara lie in close proximity, we will pledge ourselves to satisfy him, as to the difference in the quality of the work on the two vessels, and yet we hazard nothing in saying that the Wabash will compare favorably with any one of the five steamers referred to. The writer may attribute the cause of this difference to what he pleases, and the assertion to our "modesty." Those who know us best, will accredit us with a reasonable share at least.

As to the absolute necessity of an exposed stern-post apart from the vessel, above water, *target like*—we deny it; even though the propeller is to be hoisted out of water. And though we may not have taken as many copying notes from the English Navy as "Fair-Play," though accredited for more, yet we are prepared to announce the name of one vessel at least, to those who are "as well qualified to judge as ourselves," when their names shall have been given, *seeing that we must have a Navy so like the English, and so unlike this age of progress.* The writer is indeed befogged, when he assumes that we have been dealing in "wholesale condemnation" of the Navy. We deprecate the time when such harsh measures will be necessary. We advocate reform, nothing more. We have had an attempt at reform in the *personnel,* why not in the material? Surely any one who is at all conversant with naval construction, must see the necessity of using all the talent, both in and out of the Navy, in securing reform.

"If the Merrimac and her consorts are not surpassed by any war steamers afloat," why was she not designed for 25 feet water, instead of 23 feet? Why does she now draw 23 feet 9 inches, *and out of trim at that,* with part of her armament kept out? Trim the Merrimac now, to the requirements of her model, and she will draw 25 feet water.

We are not disposed to leave the main issue, "Is the Merrimac a failure?" We say that *any vessel is a failure, when that vessel fails to answer the purpose designed.* The Merrimac was designed to carry the armament for which she was pierced on 23 feet draught. Now what are the facts? Simply these: She does not carry her armament, and is down by the head from her natural trim, and yet she draws 23 feet 9 inches of water; in order to save her from heavy draught, part of her armament is left out, and her best efforts crippled, by crowding the centre of gravity of displacement forward of its proper position, thereby leaving the ship under an unnatural strain, which must soon show itself in the *hog* of the vessel. We submit these facts to the judgment of "those who know as much as we do" about this matter.—The natural trim of the vessel is at least 3 feet by the stern. In order to get around these facts, we shall be told that she has more than her complement of coal. This we say will conflict with the statement publicly announced, which was, that she was not to use steam on her trip to Southampton. Then why endanger the vessel, already out of trim, by carrying an excess of coal for which she has no use? Which horn of the dilemma will "Fair Play" take?

Query.—Who will give us her draught of water when she arrives at Southampton?

"Fair-Play's" remarks in reference to "*Correspondent*" are out of place. He is not one of the editors, or in any way connected with the magazine, nor has he had access to the MS. of "Fair-Play."

EDITORS NAUTICAL MAGAZINE—

GENTLEMEN: We regret to be compelled to appear once more in your columns in reply to your correspondent, "Fair Play." His quibbling propensities, together with his arrogant assumption of professional acumen, are of so ludicrous a character, that we can scarcely contain our mirth at the absurd gambols of this steam-quixote. The first wind-mill he rides his Rosinante at, is the terms used by us to designate the particular part of the boiler to be pointed out. The words used are strictly professional, being almost the only terms of a technical character calculated to convey a knowledge of the particular locality meant. We might go on to show the absurd nature of this lilliputian criticism, but have neither time nor inclination for more than the following, at the present time. Hear him again, modest man that he is: "*If Correspondent is an engineer*, he ought to know,"&c.—Now, "*Correspondent*" is an engineer, and denies "Fair Play's" assumption, as there is a vast difference of arrangement in the respective boilers; as, for example, in the horizontal boiler long open spaces, extending between and along the whole length of the tubes, are left for the passage of the steam and wat

ascend in one unbroken sheet the whole length of the tube some nine to twelve feet long, the entrance of the steam *below* being *facilitated* by the bottom-side of the tube presenting a *curved surface*.

In the vertical tubular boiler peculiar difficulties present themselves. The water in the tubes *cannot extend* either way more than the *interior diameter* of the tube, say from $1\frac{3}{4}$ to $1\frac{7}{8}$ of an inch. Contrast this with the *unbroken sheet* named above of nine to twelve feet; it will be obvious that the contracted space is such, with the resistance due to the friction of the sides of surrounding tubes, as to impede enormously the free passage of the water in and up the tubes.

As to the performance of the Wabash and Susquehanna, we must remark, that their boilers were more vaunted than the above. Yet what are the facts from the Merrimac's boilers. Whilst lying in this port there had to be cut out about six hundred tubes, nor was this all; the draft was so bad, that resort was had to a steam-pipe leading out of the steam-chimney to assist the draught, by blowing a continuous stream of steam up the stack to force the draught. Of the waste of fuel due to such an extraordinary piece of engineering, we will say nothing. Again, it is a well-known fact, which we are prepared to prove, that five hours are required to raise a head of steam. The want of steam, in consequence of the miserable arrangement of these boilers, notwithstanding the large amount of grate and heating surface, as compared with other boilers arranged by Mr. Martin, is such, that it is impossible to average more than seven nautical miles the hour out of the ship, when under steam alone. The facts here stated will apply in the main to the whole batch of abortions called boilers built after Mr. Martin's plans.

Again, we are told that the only reason for shutting down the damper was to prevent the generation of too much steam, &c. If this were really the case, why did not the engineers use one half the boilers instead of the whole, as they would have been sufficient to test the amount of evaporation. We have already noticed this matter in our previous reply. The facts are as there stated; the damper was put down in order to burn the fires slowly, so as to *ensure the greatest evaporative results.*

Any one having a knowledge of evaporation, knows that a common dinner-pot will give, under the same circumstances, greater results than Mr. Merrick's reports in the Franklin Journal describes, provided that the inside and outside are free of all non-conductors: such as scale due to salt or other impure water on the inside, and salt or ashes on the outsides. The modus in this case will consist of putting down the damper of the furnace,* so that the fire may burn with a slow combustion, when owing to the low draught, time may be given for the heat to be entirely taken up by absorption, owing in part to the clean surface over which the products of combustion slowly pass. It must now be seen that the clear fresh water of the Delaware

* This having been the mode of testing the boilers of the Susquehanna.

used in the Susquehanna's boilers, (which forms no mineral scale to cover the surface,) with the putting down the dampers, would very much conduce to give a large evaporative result in consequence of the surfaces being in a good conducting state from the causes set forth.

Thus it is seen, that blowing out *is not only the element to be allowed for* in conducting such experiments.

As to the mis-statement said to have been made by us, to the effect that it was Mr. Merrick, and not Mr. Martin's subordinates who conducted the experiments on the Susquehanna as stated, we do not see how we could be benefited by making a wilful mis-statement of this nature, as the subordinates named are certainly more under the influence of their superior officer than the builders of the boilers, who, at the worst, would only lose the government patronage; whilst on the other hand, the engineers referred to might lose their places, or be subject to mortifying annoyances from the hostility of their chief.

As regards our ignorance of engineering data, in not knowing that allowance for blowing is always made when evaporating salt water in marine boilers, and the advice "to be better posted up," &c., we will only say, that we will take it for what it is worth.

With the permission of the editors this article will be continued, as much remains to be answered as well as told.

CORRESPONDENT.

THE LOG-LINE AND THE VELOCIMETRE.

FOR nearly three hundred years the nautical commerce of the world has been mensurating its trackless pathway over the ocean by the aid of the reel, log, and line. So completely have the habits of the commercial world become wedded to this mode of mensuration, that its presence on shipboard has been regarded as scarcely less essential than the binnacle and magnet, and of quite as much importance as the instruments for observation. The line forming the ground-work of *dead reckoning* at sea, it cannot be a matter of surprise, that any innovation upon the use of this time-honored custom, must be attended with demonstrations of doubt by a large portion of the nautical fraternity of the commercial world. However startling the announcement, or strange the circumstance which gave rise to the necessity of a more reliable mode of lineal admeasurement at sea, it will not be regarded as less surprising by the mariner to learn that the days of the log-line and reel, with its attendant glass, are numbered, and must give place to the developments of genius as exhibited in the introduction of the *Velocimetre*, for determining the speed of vessels, the effects of which we have recently witnessed. The simple fact of being able to determine, accurately, the ac-

tual speed of a vessel, at any moment, by simply looking at the dial, is perhaps too much to ask the nautical fraternity to give credence, and yet such are the wants, and we may with pleasure add, such are the facts. The *Velocimetre* is no longer a problem for solution, but a demonstrated truth, which prejudice cannot obliterate or ignorance set aside. By the aid of science, mechanical genius has devised a mode of mensurating this lubric element on ship-board, at once reliable, determinate, and beyond the insinuations of probability.

It would seem that one improvement like this would quite suffice to change the tenor of marine assurance; but inasmuch as one link in the chain of progress but makes an opening for the introduction of another, so the *Velocimetre* has induced the necessity of another advancing step, and a *Lee-way Indicator* claims affinity with the *Velocimetre* by its attachments to the same vessel, and by its indications upon the same dial. *It is only necessary to examine the consequence of this child-like mode of measuring the ocean with a string*, to see at once that a very great proportion of the marine losses are consequent upon the *log-line and glass*, and yet the whole commercial world are verily guilty of this impropriety in the middle of the 19th century. At the call of every watch is the signal for heaving the log, and often in the middle of the watch, at most twelve times in 24 hours, unless the case be one of extraordinary demand. This, on the ground of accurate determination of speed, would be a wild and crude basis for the distance sailed in a whole day and night; we say crude, because the operation of heaving the log scarcely occupies more than half a minute, and if two counts were taken at each time, we have the speed of the vessel but twelve minutes, or one-fifth of an hour out of twenty-four. This is too small a fraction of a day's work to determine with any degree of accuracy the vessel's position from dead reckoning. But we are unwilling to award to the log-line even this. We say that of all the various modes of *guessing* at distance, this is the most deceptive; and for two reasons—first, because it has the confidence of mariners, and second, because of its numerous inaccuracies, which we shall proceed to show. The log-line is divided into spaces of 50 feet, while others say 47·5, and 48 by others, and 51 feet by some others. After reeling off about 5 fathoms for what is called stray line, where the count begins, and from thence each space of 47.5, 48, 50, or 51 feet, as the will of the master determines, at each length so set off, a short piece of the same cord is inlaid in the line, with a knot tied in it for each number of spaces; these are called knots, and are supposed to divide the nautical mile into 120 equal parts, while the time is measured by a sand-glass of a certain number of seconds. In order to avoid calculation, the length between the knots is supposed to be so proportioned to the time of the glass, that the number of knots unwound while the glass runs down, shows the number of miles the ship is sailing per hour. Thus, suppose the glass to be a half-minute one, it will run down 120 times in an hour.

Now, distances at sea are reckoned by nautical miles of 6,120 feet, or 60 to a degree, so that each mile containing 6,120 feet will also contain a 51 feet length of line 120 times. If, therefore, the knots are fastened to the log-line at distances of 51 feet, the number of knots unwound from the reel in half a minute, is set down as the number of miles the ship runs in an hour. If the glass runs down in less than half a minute, the interval between the knots must be diminished in proportion. This we regard as a convenient way of making the vessel go about as fast or slow as we please, and has been the occasion of the loss of thousands of lives and millions of dollars in property.

It should not be forgotten that even though the knots were accurately determined, and the glass set with a corresponding degree of care, still there are many circumstances which serve to destroy its value as a means of mensuration at sea, the contraction and expansion of the log-line, the influence of the atmosphere in its different states upon the sand in the glass, the heave of the sea, the current engendered by the passing vessel, all tend to show that the log is not only not reliable, but the fruitful source of disaster. We need not travel back over the musty folios of past history to show this; we have the evidences before us. How came the Cunard steamer Arabia on Blonde Rock when on her outward bound voyage, from which she is about returning —one of the most hair-breadth escapes from total shipwreck that we have ever had occasion to record? The ship had overrun her log 20 miles, and thus frustrated the calculations of the pilot who calculated on two hours ebb tide out of the Bay of Fundy, to carry him clear of all danger. This ship was driven, while drawing 21 feet water, over a rock on which there was but 16 feet. Similar mistakes are constantly occurring, and are charged to the dangers of the sea; we are rather inclined to charge the most of them to the dangers of the log. But the whole story is not told; there has been a carelessness in knotting the log-line that is inexcusable. It is bad enough to be compelled to use it; but to be subjected to irregularities by such carelessness as is sometimes witnessed, is beyond endurance.

For our own satisfaction we take occasion sometimes to measure log lines, and in one instance to which our mind recurs, it had been in service three years. The vessel to which it belonged had been trading to the West Indies and other southern ports. The knots of this line were variable, the difference extending from eight inches to six feet nine inches, while the glass to which it was said to be adapted was marked fourteen seconds; and on a fine day, with an arid atmosphere, required seventeen seconds to run out. These irregularities frequently occur, and is the cause of untold misery and loss. The shipmaster undertakes to regulate his log line, and every one familiar with a seaman's standard (fathom), knows how he obtains it. But not less useful, to set aside this wholesale guess-work at sea, is an indicator for determining the lee-way of vessels. We are not aware of any real pretensions on the part of mariners to determine the lee-way of vessels. The tides and currents of the ocean

are a sealed book to them, so far as it applies to practical application on shipboard. Nautical Astronomy, standing high in the list of sciences, determines the ship's position, when an observation can be obtained; but, how often days and weeks pass by, without being able to apply this regulator to determine the ship's position; then the value of the *Velocimetre and Lee Way Indicator* may be fully known; then the ship's place may be determined with a degree of accuracy unknown in the annals of dead reckoning. We hail with pleasure these new appliances to the safety of life and property, and cannot avoid the conclusion that they will meet with a favorable reception both from the nautical fraternity and the Board of Underwriters.

ON MAST AND SPAR-MAKING.

To the ship-builder belongs the duty of stationing the masts, and designing the plans for sparring a ship. Where the builder happens not to be familiar with the principles of masting and sparring vessels, the owner would in every case consult his own interests in employing the services of a competent architect, who should take into account all the elements of science involved in the practical elucidation of this problem. The old system of sparring vessels from their principal dimensions, has had its day with the best informed builders of the United States. In its place, a more common practice, amongst those who care not for a strict scientific investigation of the peculiarities of the model in connection with the projection of the spar draft, is to delineate a plan of the sails from dimensions of masts and yards, of the most approved rig, adopted by about the same sized vessel, and, if adjudged necessary, the sails are varied from the copy to suit the trade and the number of crew. In consequence of this practice, we find vessels in the same trade, of the same dimensions, and perhaps similar model, of the same stability, with very dissimilar rigs and areas of canvas. Without regard to the fitness of things, the masting and sparring of vessels are often regulated by the opinions and tastes of owners, or masters, or influential friends, and at other times by the fancy of the builder.

Such a disposition of this most important problem of furnishing a ship with her propulsory elements, does not always secure a profitable character, but often militates against the credit of the model—the fault, if any, being naturally laid at the door of him who is never present to speak for himself. Our experience has demonstrated to ourselves, that it is always best to locate the effort of sail in strict antagonism to the various resistances that will be encountered from the sea, to the progress and flotative properties of the ship. This cannot be done, except we know the elements of the model, and how to proportion the forces of propulsory power in each particular case required. The mode of making calculations for sail from the model of

a ship, and from the science of forces, may be found in the SHIP-BUILDERS' MANUAL, published by Mr. Griffiths, of this magazine, to which we would refer the reader, if interested in these problems.

In this article we propose to furnish the diameters and forms of masts and spars which are generally recognized by spar-makers in this country and in England. In ascertaining what strength and form should be given to the several spars of a vessel to secure a proper resistance to the strains which they will be subjected to, we have no benefit of any means, except what experience and service have furnished, and which appear to have been all that spar-makers have ever required. Although it should be well known that the various kinds of timbers used in different parts of the world, for masts and spars, differ greatly in strength of fibre; in practice, we find little or no attention paid to the fact, perhaps because spar-makers do not know the precise ratios of strength. It is plain enough that some discrimination should be used in the application of "rules" to the diameter of spars—that the stronger kinds of timbers require less size than those of inferior strength. Also, in the selection of trees for masts and spars, it is of very great importance that the timber be sound and fit to be used.

From observations that the spar-maker has been enabled to make, his judgment has been formed respecting the strength and diameters that are requisite for all masts and spars, and the following rules ascertained by experience to be pretty correct and easy of application have been given.

The largest diameter is fixed in proportion to the length, and is *given* thus: At the partners of lower masts; at the caps, in top-masts and top-gallant-masts; at the bed of bowsprits; at the slings of yards; at the bowsprit cap of jib-booms; at the middle of driver-booms; at the sheet of mainsail-booms; at about four feet from the ends of gaffs; at one-third from each end of top and top-gallant-studding-sail-booms; and at one-third from the inner end of swing or lower studding-sail-booms.

The diameters of masts and spars generally follow some proportion to their length, thus: main and foremasts of ships, one inch for every three feet of the length; mizen-masts, two-thirds of the diameter of the main-mast.

Main-masts of brigs, one inch to every three feet of length; and the fore-masts, nine-tenths of the size of main-masts.

Masts of cutters and schooners, one-quarter of an inch in diameter to each foot of length. (If of white pine the mast should be larger, and the foremast of schooners should be larger than the main-masts.)

Main and fore-topmasts, one inch to every three feet in length; mizen-top-masts, seven-tenths of the diameter of the main-topmast.

Top-gallant-masts, one inch to every three feet of their length.

Royal-masts, two-thirds the diameter of their top-gallant-masts.

Bowsprits, the same diameter as the main-mast.

Lower yards, seven-tenths to seven-eighths of an inch to every three feet of length.

Topsail yards, five-eighths to seven-eighths of an inch to every three feet of length.

Top-gallant yards, six-tenths to five-tenths of an inch to every three feet in length.

Royal yards, one-half the diameter of their topsail yards.

Studding-sail yards and booms, one inch in diameter to every five feet in the length.

Jib-booms and flying-jib-booms, seven-eighths of an inch to every three feet in the length.

Driver-booms and gaffs, the same proportion as the topsail yards.

The intermediate diameters may bear the following proportion to the given diameter. Lower masts for ships and brigs $\frac{60}{61}$ of the diameter at partners for the size at the first quarter; $\frac{14}{15}$ at the second quarter; $\frac{6}{7}$ at the third quarter; $\frac{3}{4}$ at hound; $\frac{5}{8}$ at cap, and $\frac{6}{7}$ at step. For schooners, heel $\frac{5}{6}$ of partners; tressle-trees, $\frac{3}{5}$ of partners; cap, $\frac{1}{2}$ of partners. Large schooners or sloops require greater proportions—say, tressle-trees, $\frac{4}{5}$ of partners; cap, $\frac{3}{4}$ of partners.

Topmasts, top-gallant-masts, and royal-masts have the same proportions as lower masts, except that the hounds and head are larger—say, hounds $\frac{9}{13}$ or $\frac{4}{5}$ of given diameter; head, $\frac{6}{11}$ of same. For schooners and sloops, hounds $\frac{10}{13}$ of given diameter; head, $\frac{1}{2}$ of same.

Bowsprit, $\frac{60}{61}$ of given size, at first quarter; $\frac{11}{12}$ at second quarter; $\frac{4}{5}$ at third quarter; $\frac{2}{3}$ at cap, and $\frac{6}{7}$ at heel.

Yards, $\frac{30}{31}$ of sling diameter at the first quarter; $\frac{7}{8}$ at second quarter; $\frac{7}{10}$ at third quarter; at arms, $\frac{3}{7}$; lower and topsail yards may be $\frac{1}{2}$ of slings at the arms.

Jib and driver-booms, $\frac{40}{41}$ of given diameter at the first quarter; $\frac{11}{12}$ at the second quarter; $\frac{5}{6}$ at the third quarter; ends, $\frac{2}{3}$. For schooners outboard end, $\frac{3}{4}$; inboard end of jib-booms also $\frac{3}{4}$.

Or, main-booms may be $\frac{40}{41}$ at first quarter; $\frac{12}{13}$ at second; $\frac{7}{8}$ at third; fore end, $\frac{2}{3}$; aft end, $\frac{3}{4}$, and middle, $\frac{11}{12}$ of diameter at sheet.

Gaffs, $\frac{40}{41}$ at first quarter; $\frac{11}{12}$ at second; $\frac{4}{5}$ at third, and $\frac{5}{9}$ at end. The heeling of standing masts and bowsprit are sometimes after the following proportions: masts, $\frac{2}{3}$ of given diameter athwart-ship, and $\frac{1}{2}$ fore and aft; bowsprit, $\frac{7}{12}$ athwart-ship, $\frac{2}{3}$ up and down.

There is a certain fitness of proportion in the preparation and finish of masts and spars, which causes a vessel to display to advantage. This quality in sparring, so far as outline of masts and spars are concerned, will be found to consist in neatness of extremities. A clumsy appearance in a yard or boom, &c., is due to an insufficiency of contrast between the diameters of the middle and the ends. Proportions that give strength to a spar will at

the same time endow it with the elements of beauty. It is the *rake and taper* that give life to spars.

On the finishing and fitting of masts and spars we may remark in a future number. This principle should be kept in view by the spar-maker, viz.: a sufficiency of material for strength, with the least weight and bulk possible. Wire rope has been successfully introduced for rigging, and a patent has been taken in England for making the trunks of masts and the middle portions of yards, &c., of sheet-iron. As it is important to reduce the weight and bulk of spars and rigging for ships, we are prepared to expect many improvements will be made in the application of sail power to marine propulsion.

THE STEAMSHIP GREAT EASTERN.

The accompanying engraving exhibits a transverse section of the ship, divided into cellular compartments.

No. 1. Upper Saloons to main deck.
No. 2. Principal Saloon on lower deck.
No. 3. Side Cabins and Berths.
No. 4. Tunnels for steam and water-pipes.
No. 5. Boilers.
No. 6. Coal Bunkers.
No. 7. Space between inner and outer skins of ship.
No. 8. Coal Bunkers.
No. 9. Sky-light to principal Saloon.
No. 10. Double Decks.

We shall publish the lines of this vessel at our earliest convenience.

DISASTERS AT SEA.

STEAMERS.

Wellington, was lost on Lake Ontario, August 25th.
Paugasset (prop.), was burned at Dunkirk, N. Y., August 25th.
Titan (tug), was totally lost near Squan Inlet, September 5th.
Knickerbocker (steamboat), New York for Albany, became a total loss, September 2nd.

SHIPS.

C. D. Merwin, Cardiff, for New-Orleans, was dismasted, August 10th.
John Currier, Mobile, for New-York, went ashore on Fenwick's Island, August —— (supposed total loss).
Arkansas, was lost at Sagua La Grande, August 27th.
Colchis, Boston, for New-Orleans, was wrecked on Gingerbread Shoals, August ——.
Metropolitan, Cronstadt, Russia, for Boston, stranded in the Gulf of Finland, August 21st.
Monsoon, Sydney, N. S. W., for San Francisco, put into Hong Kong in distress, June 2nd.
Sunny South (Br), was abandoned in latitude 35 deg. S., longitude 28 deg. E., June 24th.
Rubicon, Boston, for New-Orleans, put into Havana in distress, September 5th.
Diadem, New-Orleans, for New-York, was abandoned, August 31st.

Sebasticook, Shields, for New-York, was seen September 13th, much damaged.
Isaac Allerton, New-York, for New-Orleans, went ashore on Florida Reef, August 27th, will be a total loss.
Ocean Home, Rotterdam, for New-York, in collision with ship Cherubim and sunk, September 5th, 77 lives lost.
Ganymede, Bombay, for London, put into Mauritius, in distress, June 11th.
Ianthe, Siam, for Hong Kong, put back in distress, June 23rd.

BARQUES.

Francis, New-Orleans, for New-York, was wrecked near New-Orleans, Aug. ——.
Cherokee, New-Orleans, at Charleston, was much damaged, August 28th.
Emigrant (Br.), was lost near Key West, Fla., August 27th.
St. Lawrence, was totally lost near Belize, Hond., August 28th.
Washington Butcher, at New-Orleans, from Philadelphia, was much damaged, August 29th.
Warden, was wrecked at Sagua La Grande, August 27th.
Aquilla, was wrecked at Sagua La Grande, August 27th.
Albers, was lost at Sagua La Grande, August 27th.
Marselloise, Rockland, Me., for New-Orleans, was destroyed by fire, August 18th.
Merlin, Caribbean Sea, for Baltimore, put into New-Orleans, in distress, September 4th.
Marie (Fr.), put into Havana, in distress, September 3rd.
Maid of the West, Quebec, to Chicago, Ill., was totally lost on Lake Michigan, September 2d.
H. Thornton, at New-Orleans, was much damaged, August 27th.

BRIGS.

Lubec, was lost near Pembroke, Me., August ——.
Chastena, Baltimore, for Dighton, went ashore on Long Island, August —— (total loss).
Winyaw, New-York, for Malaga, put back in distress, August 27th.
Rosa Bella (Br), at Baltimore, from St. Eustasia, lost sails, &c., September 1st.
D. S. Brown, Philadelphia, for New-Orleans, put into Charleston, S. C., in distress, September 6th.
W. A. Drew, was wrecked at Scirra Morena, Cuba, September ——.
John Hathaway, was totally lost at Sagua La Grande, August 27th.
Galveston, was wrecked at Sagua La Grande, August 27th.
Random, was lost at Santa Cruz, Cuba, August 28th.
Ocean Wave, Mobile, for New-York, put into New-Orleans, in distress, August 29th.
Loretto, Philadelphia, for Montevideo, put into Barbadoes, August 18th, in distress.
Bessey (Br.), Jamaica, W. I., was totally lost at Inagua, Sept. 6th.
Niagara, Pensacolo, Fla., for Havana, was abandoned September 6th (is a total loss).

SCHOONERS.

Heloise (whaler), was wrecked near Rio Janerio, July 7th.
Ellen, New-Orleans, for Matanzas, was lost on the passage, August ——.
Canton, for Baltimore, was wrecked at Arrecibo, P R., August 20th.
Southerner, Philadelphia, for St. Johns, N. B, was lost near Long Island, August 19th.
Manchester (Br.), was wrecked near New Orleans, August ——.
Mogul, Richmond, Va., went ashore at Southampton, August 19th (total loss).
M. L. Hall, Sedgewick, for Boston, was lost off Scituate, Mass., August 20th.
M. Snow, Lubec, Me., for ————, went ashore at Squam Bar, Mass, August 20th (total loss).
Truth, ashore at Atlantic City, went to pieces August 26th.
Jane and Eliiza, Calais, Me., for New-York, put into Gloucester, Mass., in distress, August 15th.
John Roales, was lost near New-Orleans, August ——.
E. J. Talbot, Georgetown, S. C., for ————, put into Norfolk, Va., waterlogged, September 5th.
B. Flanner, at New-York, from Savannah, is much damaged.
Glenview, went ashore near Cape Henry, September 1st (supposed total loss).
Active (U. S.), was totally lost on Bird Key Shoal, September ——.

LAUNCHES.

At New-Bedford, Mass., August 30th, by Messrs. S. Dawson & Co., ship Hiawatha, of 380 tons
At Fairhaven, Mass., August 24th, by R. Fishe, Esq., ship Rapid, of 500 tons.
At Kennebunk, Me., August 30th, by Messrs. Emmons & Littlefield, ship Golden Star, of 1200 tons.
At Setauket, L. I., August 23d, by D. B. Bayles, Esq., schr. Decatur Oakes, of 200 tons.
At Newburyport, Mass., August 28th, by J. Currier, Jr., ship Lucretia, of 850 tons.

At Port Jefferson, L. I., August 17th, schr. Millard Fillmore, of 240 tons.
At Greenpoint, L. I., September 2d, by Messrs. Wells & Carpenter, brig T. R. Rodgers, of 300 tons.
At Fairhaven, Mass., September 1st, by Messrs. Delano & Co., ship Swallow, of 432 tons.
At Bath, Me., September 4th, by Messrs. Trufant, Drummonds & Co., ship White Mountain, of 1200 tons.
At New-York, September ——, by W. H. Webb, Esq , steamtug W. H. Webb, of 600 tons.
At Bristol, R. I., September 1st, by Messrs. Thompson & Bro , schr. H. B. Metcalf, of 200 tons.
At Warren, R. I., September 6th, by Philip Chase, Esq., barque Edwin, of 450 tons.
At Mattapoisett, Mass., September 10th, ship Sea Ranger, of 370 tons.
At Baltimore, September 2d, barque Wheatlead, of 500 tons.
At Charleston, S. C., August 27th, schr. James R. Pringle, of 100 tons.
At Chelsea, Mass., September 11th, ship W. H. Prescott, of 1700 tons.
At South Dartmouth, Mass., September 13th, barque Aurora, of 340 tons.
At East Boston, September 9th, ship ————, of 1200 tons.
At Bath, Me., September 11th, by Messrs. Robinson & Co., barque ————, of 600 tons.
At Whiting, Me., brig Fanny, of 269 tons.
At Kennebunkport, Me , September ——, ship Wm. Lord, Jr., of 1248 tons.
At Greenpoint, L. I., September 13th, by E. S Whitlock, Esq., steamship Columbus, of 680 tons.
At New-York, September 15th, by W. H. Webb, Esq., ship Ocean Monarch, of —— tons.
At Medford, Mass., September 13th, by J. O. Curtis, Esq., ship Flying Mist, of 1200 tons.
At Farmingdale, Me., September 10th, by W. S. Grant, Esq., ship Samuel C. Grant, of 1100 tons.
At Smyrna, Del , Sept ——, schr. ————, of 300 tons.
At Thomaston, Me., September 15th, ship William Singer, of 1100 tons.
At Thomaston, Me., September 15th, ship J. Gillchrist, of 1500 tons.
At Hare Point, L. Canada, by T. C. Lee, Esq., ship Indiana, of 850 tons.

SALES OF VESSELS.

Ship S. A. Phelps, at Marseilles, August 5th, for $35,000.
Ship R. Mitchell, of Nantucket, 386 tons, for $10,000.
Ship Cairo, built at Medford, Mass., 15 years old, 536 tons, for $13,500.
Ship Pomona, built at Boston, 1200 tons, for $13,500.
One-eighth of ship Gen. Pike, at auction, in New-Bedford, September 2d, for $4,558.
Barque Zotoff, at Salem, for $5,000.
Barque Tempest, built at Robbinson, Me., 330 tons, for $11,500 cash.
Barque Chase, 9 years old, 381 tons, for $9,000.
One-sixth of barque Maria, at New-Bedford, August 19th, for $2,350.
Brig George Washington, 150 tons, for $2,400
Brig Bramin, 5 years old, 185 tons, at auction, in New-York, for $6,250 cash,
Brig Narragansett, 242 tons, 7 years old, for $————.
Brig Frederick, 141 tons, 9 years old, for $4,425.
Brig Helen, 180 tons, for $6,500.
Schr. W. H. Cumings (wreck), for $650.
Schr. Jane A. Ferguson, of Brookhaven, Mass., 200 tons, 14 years old, for $2,500.
Barque Southerner, 14 years old, 227 tons, for $7,000.
One-fourth of ship Cincinnatus, of Boston, at the rate of $60,000.
Ship Jenny Lind, of Boston, 619 tons, 8 years old, September 20th, for $22,000.

NOTICES TO MARINERS.

Light-House on Hjelm Island, Denmark.—The following official information has been received at the Office of the Light-House Board, through the Department of State, and is published for the benefit of mariners :

Should no unforseen accident prevent, a fixed light, varied by flashes every four minutes, will be established during next autumn (1856) on the Island of Hjelm, situated in the Kattegat, in latitude 56 08 N., longitude 10 48 30 E. of Greenwich

The illuminating apparatus will be a lens of the second order, placed at an elevation of one hundred and sixty-seven feet above the mean level of the sea, on a round brick tower, thirty-seven feet in height.

This light will be distinguished as follows, viz.: A bright fixed light will appear for a period of two minutes and fifty-five seconds; this will be followed by an eclipse of twenty-five seconds' duration, which will be succeeded by a brilliant flash of about fifteen seconds' duration; then there will be an eclipse of twenty-five seconds' duration, after which the bright fixed light will reappear for the period of two minutes and fifty five seconds as above.

In clear weather, from the deck of a vessel fifteen feet above the water, the fixed light should be visible at a distance of eighteen miles, and the bright flash about twenty miles all around the horizon.

Within eight miles of the light-house the eclipse will hardly be observable.

Copenhagen, June 26, 1856.

TREASURY DEPARTMENT,
Washington City, August 26, 1856.

LIGHT-HOUSES AND BUOYS AT THE IONIAN ISLES.—The following information has been received at the office of the Light-house Board, through the Department of State:

CORFU—*Teguoso.*—This is a light situated on a rock at the entrance of the north channel, in latitude 39 48 10 N., and longitude 19 57 30 E. The light is fixed, and may be seen in clear weather twelve miles. The height of the lantern above the water is one hundred feet. The height of the building is fifty-five feet.

Citadel.—This light is situated in latitude 39 37 05 N, and longitude 19 56 E. It is fixed, and may be seen in clear weather twelve miles. The height of the lantern above the water is two hundred and forty feet, the building itself being thirty-two feet in height.

Lefchimo.—This is a light-vessel moored in five fathoms water, on the north part of the shoal, in latitude 39 27 30 N., and longitude 20 01 E. It shows, at an elevation of twenty-seven feet above the water, a fixed light, which may be seen in clear weather from six to eight miles.

Note.—By keeping this light N. N. W. ½ W. by compass, all danger to the southward of it will be avoided.

BUOYS.—There are two buoys placed on the shoal extending from Cape Bianco. The first, RED, is about E. by S., two miles distant from Cape Bianco, in nine fathoms. The second buoy, BLACK, is in nine fathoms on the southern extremity of the shoal, at the distance of two and a quarter miles from the same cape. These buoys bear from each other nearly N. N. E. by ¾ E, and S. S. W. by ¾ W., by compass, about one mile and a quarter apart.

Note.—It may be useful to know that these two buoys and Lake light are nearly in the same line,

PAXO—*Laka.*—This light is situated on Laka Point, in latitude 39 13 N., longitude 20 09 E. It is fixed, three hundred and sixty-nine feet in height, and may be seen in clear weather fifteen miles.

Note.—This light is not visible between the bearings of N. by E, southward to W. by N., on account of the intervening land.

Madonna.—This light is on the Madonna island, in Port Gayo, in latitude 39 11 30 N., longitude 20 12 20 E. It is fixed, and may be seen in clear weather ten miles. The height of the building is seventy feet, and the lantern is one hundred and seven feet above the level of the sea.

Buoy.—A buoy is situated on the Madonna shoal and bears from the Madonna light-house E. by S., nearly. It is white, with circular black stripes, and is moored in four and a half fathoms water.

ST. MAURA—*Mole.*—This light-house stands on the end of the pier or Mole, in the north anchorage, in latitude 38 50 30 N., longitude 20 42 55 E. The light is fixed, and may be seen in clear weather nine miles. Its height above the water is fifty-four feet.

Note.—The bearing of Plaka Point from this light-house was found, by an astronomical bearing, to be N 78 W., or W. by N (true), or W. by N. ¾ N. (by compass). Ships coming from the south and west must, therefore, bring the light to bear about S. E. (by compass) before shaping their course towards it. Ships coming from the south will open the light when it bears E. ½ N. (The plan of this anchorage (No. 1009) is in error with reference to the above bearings.)

ITHACA—*St. Andrea.*—This a small light attached to a post at the entrance of Port Vathy. It is placed on St Andrea Point and is only useful to guide vessels after they have entered the Gulf of Molo to the entrance of Vathy Harbor. It is elevated thirty feet above the water, and may be seen at the distance of four to five miles. Latitude 38 22 20 N., longitude 20 42 30 E.

Lazzaretto.—This light is situated on the Lazzaretto (Port Vathy) in latitude 39 22 05 N., and longitude 20 42 47 E. It will not be seen until you are near the entrance of the harbor, into which it serves to guide vessels.

CEPHALONIA—*Guardiani.*—This light is situated on the south-east extremity of the island of Guardiani, in latitude 38 08 N., longitude 20 26 30 E. The building is one hundred feet in height, and the light is one hundred and twenty-two feet above the water, and may be seen in clear weather sixteen miles.

Note.—In rounding this light-house great care is necessary on account of the shoal extending from the island. When to the south and east of the light do not increase the altitude of the upper part of the light-house from its base above 1 15.

St. Teodoro.—This light is situated on "Hook Point," (Port Argostoli,) in latitude 38 11 13 N.,

longitude 20 28 33 E. It is a fixed light, elevated thirty-five feet above the level of the sea, (the building being twenty feet high,) and may be seen in clear weather nine miles.

Note.—During the night, having passed the light, bring it in line with Guardiani light, and run with that mark on until you open the lights of the town, when you shall have twelve fathoms in an excellent outside berth. "St. George Castle" will be just touching an intervening slope; and in the day time you may run up abreast of the Sanita and anchor with that mark on or a little closed in.

Buoys.—A small buoy lies in six fathoms at the southern extremity of reef extending from St. George's Point near the entrance of Argostoli Harbor.

A buoy similar to the above is placed in two and three-fourths fathoms on the northern extremity of the shoal extending from Hook Point light-house.

Note.—A ship's length northwards of this buoy there are five fathoms water.

A buoy of about the same size is moored on a shoal in Argostoli Harbor above the Lazaretto.

A large black buoy is placed on the southern end of the shoal off Cape Scala; it lies in six fathoms water.

Zante.—*Crio Nero.*—This light is situated on Cape Crio Nero, near Zante anchorage, in latitude 37 48 39 N., longitude 20 54 34 E. It is a fixed light, elevated ninety-three feet above the sea, (the building being twenty-five feet high,) and may be seen in clear weather twelve miles.

Note.—This light kept S. W. by S. leads westward of the Montague Rocks, and S. W. by W. ½ W. leads eastward of them.

Mole.—A light attached to a post at an elevation of thirty feet is situated near the end of the Mole.

Buoy.—A large black buoy is moored near the Demetrio Rock (St. Spiridione Shoal) in Zante Bay. It lies in six fathoms, off the north part of the rock.

Strofades—*Stamphane Island.*—This light is on the Convent, latitude 37 15 N., longitude 21 01 E. It is a fixed light, elevated one hundred and twenty-seven feet above the level of the sea, and may be seen in clear weather twelve miles.

Cerigo.—*St. George.*—This light is situated on a rock at the west side of Capsalli Bay, in latitude 36 08 N., longitude 23 00 E. It is a fixed light sixty feet (estimated) above the sea, (the height of the building twenty-one feet,) and may be seen in clear weather from eight to ten miles

(Variations of compass 9 W.)

Treasury Department,
Washington City, August 22, 1856.

Amelia Bar, Entrance to Cumberland Sound, Leading to St. Mary's, Ga., and Fernandina, Fla.—The buoys on the bar and river are now arranged in the following order:

Bar buoy is a second class iron nun, painted with black and white perpendicular stripes. This buoy is just outside the bar, in 24 feet water at low tide, and can be passed on either hand; the light-house bears S. W., (the general course over the bar.)

Second buoy is a third class iron can, painted black, with the No. 1 in white. This buoy is just inside the bar, in 13 feet water at low tide, near the edge of the South Breakers, and must be left on the port hand entering.

Third buoy is a second class iron nun, painted red, with the No. 2 in white. This buoy is in 13 feet water at low tide, near the edge of the North Breakers, and must be left on the starboard hand entering.

Fourth buoy is a third class iron can, painted black, with the No. 3 in white. This buoy is in 12 feet water at low tide, near the edge of the South Breakers, and must be left on the port hand entering.

Fifth buoy is a second class iron nun, painted red, with the No. 4 in white. This buoy is in 14 feet water at low tide, near the inner point of the North Breakers, and must be left on the starboard hand entering.

Sixth buoy is a second class iron nun, painted black, with the No. 5 in white. This buoy is in 18 feet water at low tide, and is placed near the shoal running off from Amelia Island, and must be left on the port hand entering.

Seventh buoy is a second class iron can, painted black, with the No. 7 in white. This buoy is in 16 feet water at low tide, near the edge of Tiger Island shoal, at the entrance of the Fernandina river, and must be left on the port hand going to St Mary's.

Eighth buoy is a second class iron nun, painted with black and red horizontal stripes. This buoy is in 12 feet water at low tide, and is placed on the point of shoal formed by the junction of the St. Mary's and Cumberland rivers.

By order of the Light-house Board.
Charleston, S. C., Aug. 20, 1856.

A black Spar Buoy, numbered 1, has been placed off High Pine Ledge, Boston Bay, in 15 feet of water. The rock is dry at low spring tides. The following magnetic bearings are given:

Gurnet Lights, S. ¼ W. Captain's Hill, W. ¾ S. Brant Point, N. by W.

Bartlett's Rock Buoy has been changed from No. 1 to No. 3.

By order of the Light-house Board.
Boston, September 10, 1856.

ATLANTIC OCEAN-FRANCE.—PONTAILLAC LIGHT, RIVER GIRONDE.—Official information has been received at the Office of the Light-House Board, that the French government has given notice, that on the 10th July, 1856, a light alternately red and white, (each color lasting twenty seconds, without intervening eclipse,) was exhibited from the summit of a wooden tower erected on the high ground of Pontaillac, situated near the entrance and on the north bank of the river Gironde, on the west coast of France.

The tower is 104 feet high, and the light 177 feet above the level of the water, and should be visible 15 miles in clear weather. It stands in lat. 45° 38' 10" N., longitude 1° 3' 42' W. of Greenwich.

The north channel leading into the Gironde is lighted already by three lights, exclusive of that of Cordouan ; one on Point de la Coubre, the second on Point de la Falaise, and the third on the tower of Terre Negre.

SAILING DIRECTIONS.—In entering the Gironde by the north channel at night, bring the white fixed light of Terre Negre on with the red and white light of Pontaillac, and keep them so until the Point de la Coubre light bears N. N. E., then alter course immediately, and steer for the revolving light of Cordouan, until you have brought the lights on Point de la Falaise and Tere Negre in one. Steer for and keep these lights in one until Cordouan light bears S. S. W., after which alter course to S. E. by S.

[*All courses and bearings are magnetic.—Var.* 20° 45' *West.*]

Washington, August 22, 1856.

MEDITERRANEAN SEA.—LIGHT ON MOUNT NAVIDAD, CARTAGENA.—Official information has been received at the Office of the Light-House Board, that the Spanish government has given notice, that on the 15th July, 1856, a fixed light, of the natural color, was established on Mount Navidad, on the west side, at the entrance of the Port of Cartagena, in the province of Murcia.

The illuminating apparatus is catadioptric, of the fourth order ; the light is placed at a height of 125 English feet above the level of the sea, and should be visible 10 miles in clear weather. It stands in latitude 37° 35' 30" N., longitude 0° 58' 37" west of Greenwich.

Every vessel entering the port of Cartagena by night, and intending to anchor on its eastern side near the powder magazine, or near the suburb of Santa Lucia, should always keep the light in sight slightly open of Navidad Point, taking care not to lose sight of it, so as to pass clear of the shoal named the Laja, within the harbor.

On the contrary, if the intention is to anchor in the part of the harbor known by the name of the Espalmador Grande, the vessel should lose sight of the light, by keeping as close as possible to Navidad Point.

LIGHT ON CAPE HUERTAS, ALICANTE.—Also, that on and after the 15th day of August, 1856, a fixed light of the natural color, would be exhibited on Cape Huertas, in the province of Alicante, in latitude 38° 20' 30" N., longitude 0° 22' 37" west of Greenwich.

The apparatus is catadioptric, of the fourth order The light is placed at a height of 124 feet above the level of the sea, and should be visible at a distance of 10 miles in clear weather.

Treasury Department, Washington, D. C., August 22, 1856.

BELL BUOY OFF THE "HEN AND CHICKENS," ENTRANCE TO BUZZARD'S BAY, MASS.—A black can buoy of the first class, with a bell weighing three hundred pounds, secured on top in an iron frame, surmounted by a hoop-iron day-mark, has been placed off this dangerous reef.

The bell is elevated six feet above the water ; it is tolled by the action of the waves, tides, and winds, and can be heard in ordinary weather about one mile. The day-mark is two feet in diameter, painted black, and is elevated nine feet above the water.

The buoy is placed in seven fathoms water, hard bottom, about one-third of a mile south of the "Old Cock"

The following magnetic bearings are given from this buoy :

Sow and Pigs light-vessel, S. by E. Seconet point, W. ½ N. Entrance to Westport Harbor, N. W. by N. Mishaum Ledge buoy, E., N. E. ¼ E. Old Cock, N. by W.

By order of the Light-house Board.

Boston, Mass., August 18, 1856.

LIGHT-HOUSE ON EGG ROCK, OFF NAHANT, BOSTON BAY, MASS.—The light-house on Egg Rock having been completed, will be illuminated on the night of September 15, 1856, and every night thereafter, from sunset to sunrise.

The house is square, one and a half stories in height ; it is whitewashed and surmounted by a tower elevated three feet above the roof, and capped with an iron lantern.

The illuminating apparatus is a fifth order lens, elevated 87 feet above high-water mark, and should be visible under ordinary states of the atmosphere about 10 miles.

The following magnetic bearings from this station are given :

Graves Bell Boat, S. E. by S. Nahant (East Point), S. ½ E. Methodist Church, Swampscott, N. N. W. ½ W. Half-tide Rock Beacon, N. ½ W. Outer Dry Pig Rock, N. E. ½ N.

By order of the Light-house Board.

Boston, Mass., August 30th, 1856.

OUR STATE ROOM.

DEATHS.—Aug. 28th, Surgeon Isaac Hulse, U. S. N.

Sept. 11th, Surgeon Stephen Rapalje, U. S. N.

Dr. Hulse entered the Navy, 12th May, 1823, and Dr. Rapalje on the 30th of June of the same year; both veterans in the service, in their corps and in their profession. The former was for many years an invalid, and consequently unable to perform sea service, but he was not on that account unemployed. Obliged to live South, he was for many years attached to the Naval Hospital at Pensacola, but was widely known, both in and out of the Navy, as a good and great physician and surgeon. The latter was of stronger physical constitution, subject, and equal to all the duties of his office, and always acquitted himself with honor.

Sept. 26th, George Steers, Naval Constructor, U. S. N., at his residence, No. 91 Cannon-street, New-York. How true it is, that "in the midst of life we are in death." Mr. Steers was in perfect health, and in the zenith of his fame as a Naval architect. He was stricken down in the midst of his usefulness.

On the day of his death, he was driving his own carriage along towards Little Neck, where his wife had been spending the summer, intending to bring her home on his return. His horses took fright and was ungovernable. In attempting to spring from the carriage, he was thrown prostrate and senseless. Two or three of his friends soon came up, took him into their vehicle, and brought him home to the city. He did not entirely recover his senses, and survived the accident only a few hours. It has been truly said in the city papers, that this melancholy event has cast a sad gloom over us, and deep is the lament shown for the untimely end of this celebrated mechanic.

Mr. Steers was a Naval Constructor in the Navy of the United States—specially appointed to build the steam frigate "Niagara," now nearly ready for sea. The object of the government in thus giving Mr. Steers a *carte blanche* to build one of "the six frigates" according to his own ideas of Naval architecture, was to secure, in a man-of-war of the largest class, those fast sailing qualities which belong to other vessels which were built by him. Speed and warlike efficiency seems to have been the object of the government, as well as the architect; and it is to be hoped, that she may be completed on his plan, and a fair trial made of her peculiar qualities and capabili

With the Niagara and the Adriatic of the Collins line, which was lau a few months ago, Mr. Steers' fame will forever be identified; a they shall "take to their ocean home," his friends will watch the ous solicitude.

A clear-headed and a self-made man, Mr. Steers was always r a good reason for every new opinion, and was ever anxious to cally every new idea. He was seldom wrong upon essential point in his profession, indefatigable in his industry, he acquired a nam rope and America, of which his countrymen should entertain a

The fame of this truly great man merits the compliment name of the Adriatic to the GEORGE STEERS.

PROMOTIONS.—Passed Assistant Surgeon, L. J. Williams, and Passed Assistant Surgeon, M. Duvall, to be Surgeons, U. S. N.

RESIGNATIONS.—Lieutenant Jas. S. Biddle, and Chaplain T. R. Lambert.

APPOINTMENT.—Rev. H. Wood, to be Chaplain, in place of Rev. T. R. Lambert.

ORDERS.—Lieut. G. T. Sinclair, to the *Wabash*, in place of Lieut. Jas. S. Biddle, resigned. Purser E. C. Doran, to the Practice ship Plymouth, in place of Purser Gallagher, detached.

MARINE BARRACKS.—We are pleased to discover that temporary barracks for the accommodation of the Marine Guard, under the command of Col. John Harris, are being erected near the guard-house, at the gate of the main entrance of the guard-quarter here, until the barracks which are to be built on the " wide water lot " of Uncle Sam shall be completed. We prophesy that they will quarter here forever, for if the government should be visited with "a sober second thought" upon this subject, they will no doubt determine to reconsider and reverse their decision in this case.

The old barracks have been a nuisance for years, and we are glad to see that the marines are soon to have a shelter that will protect them from the storms of the coming winter.

A NAVAL GENERAL COURT MARTIAL convened at the Navy Yard, New-York, on the 18th of Sept., and adjourned on the 23d, after the trial of Henry Sharpe, (seaman,) for desertion. The Court was composed of Commander F. Engle, Commander Stephen C. Rowan, Lieut. Jas. A. Strong, Lieut. John L. Worden, Lieut. Donald M'Neil Fairfax, and Purser J. George Harris, Judge Advocate.

NEW-YORK.—The Store-ship *Relief* sailed on the 3d ult. for Rio. Officers: *Lieut. Commanding*, James W. Cooke; *Lieuts.* Watson Smith, Albert Allmand, Robert Smart, Chas. P. McGarry, Joseph P. Fyffe; *Purser*, C. J. Emery; *Assistant Surgeon*, Wm. F. Hard.

The *Merrimac* made a fair start on a *fair* trial trip, after due preparation, on the 10th ult. Being now complete, we hope to be able to chronicle her progress more favorably in the future. She was spoken on the 12th ult., latitude 41 48, longitude 65 05.

The *Wabash*.—This fine frigate is now moored off the Navy-yard, where preparations are being made for her departure within a few days, to take her place as flag-ship of the Home Squadron.

There were faults in the Merrimac's construction which do not appear in the Wabash; and if by freely pointing them out in season, we may have dropped a hint which was taken at Philadelphia, we shall feel that our criticisms were not entirely in vain.

The Wabash is in all respects a man-of-war, and, to use an old English

expression, "she is in apple-pie order from stem to stern." There seems to be a place for everything, and everything in its place. Under the command of Capt. Engle, she will be not only always efficient, but wherever she goes she will be an ornament to the country.

NORFOLK.—The ship-house, from which the *Colorado* was lately launched, has sustained considerable damage by a late storm.

There is, as usual, much activity displayed at this yard, and work progresses rapidly.

The brig *Bainbridge* arrived on the 11th ult., having sailed from Rio on the 27th July.

The *St. Lawrence* is nearly ready for sea, and will sail soon for Brazil. The following officers have reported for duty on board:

Captain—J. B. Hull; *First Lieut.*—P. U. Murphy; *Second Lieut.*—J. H. Barker; *Third Lieut.*—J. D. Beall; *Fourth Lieut.*—Wm. P. Buckner; *Master*—Wm. H. Cheever; *Purser*—Sam'l Forrest; *Fleet Surgeon*—Sam'l Barrington; *Passed Ass't Surgeon*—George Peck; *Ass't do.*—Francis L. Galt; *Passed Midshipmen*—Wm. H. Dana, A. C. Izard, Wm. A. Kirkland, A. J. McCartney; *Midshipmen*—R. L. Phythiem, Rush R. Wallace, Geo. S. Shyrock, William E. Evans; *Commodore's Secretary*— Geo. L. Brent; *Boatswain*—Wm. Smith; *Gunner*—Asa Curtis; *Carpenter*—Wm. F. Laighton; *Sail maker*—Geo. Thomas.

MEDITERRANEAN SQUADRON.—A letter written on board the United States Frigate *Congress*, at Malaga, Spain, on the 30th July, reports the officers and crew of that vessel all well. They were to sail in a few days for Minorca, and then proceed on a cruise around the Isle of Sicily.

The same letter reports that the Frigate *Constellation*, after remaining a week at Malaga, had just started for Alicanti to protect any American interests which might be perilled there by the unsettled state of affairs.

A Spanish Democratic editor had sought refuge on board the *Constellation*, from the arrest which threatened him, and of course found an asylum.

PACIFIC SQUADRON.—The Panama *Herald* of Sept. 4th, says:—The United States Ship-of-war Independence, 60 guns, bearing the broad pennant of Commodore Mervin, reached her anchorage in Panama Bay on Sunday morning, the 31st ult., having made the passage up from Callao in the remarkably short time of fourteen days.

The *John Adams*, Capt. Boutwell, sailed yesterday for the Sandwich Islands.

The U. S. Revenue Cutter, *Joseph Lane*, arrived on Sat toria.

THE BRITISH EXPLORING BARK RESOLUTE, now in the Navy-yard, New-York, will be sent home to En

ber, under the command of Commander Hartstein, U. S. N. Her hull seems to be perfectly sound, requiring but few repairs. The Arctic stores, which have been lying in her store-rooms so long, have been spread out on the Navy-yard grounds for many days, exposed to sun and air, and will be taken home with her. Much of her rigging is entirely worn out, and some of it is in good serviceable condition.

It was a wise step in the government to provide for sending this ship back to England—a beautiful international tribute to the cause of Arctic exploration, in which the two countries have so cheerfully engaged.

A NEW NAVY.—General Walker, the regenerator of Central America, who is successfully planting free institutions in Nicaragua, has a little navy consisting of an armed brig and five bungoes, with which he is maintaining an efficient blockade of the ports of the enemy. Several valuable prizes have been taken, and though we may smile at this inconsiderable naval force, yet we must confess that it is evidently quite large enough for all the necessary purposes of Nicaragua at present.

SOCIETY OF THE MONTEZUMA.—The navy and army, and volunteer officers who were engaged in the Mexican War, have a society under the above style, which assembles every year in the City of New-York, on the 16th of Sept., the anniversary of our entrance into the City of Mexico, and celebrates the event by a dinner. It is purely a civic affair, a *reunion* of gentlemen who were engaged together in foreign service, a quiet meeting of old friends without public display, and without newspaper parade of speech-making. We understand that the dinner of this year took place at the Everett House, Commodore Perry presiding, and assisted by Gen. Quitman. Amongst those present were Capt. Engle, Commander De Camp, Purser Harris, Commander Colhoun, Engineer Gay, and others of the navy; Gen. Burnett, Gen. Cheatham, Gen. Wheat, and others of the volunteers; Gen. Harney, and others of the army. The evening was passed in an interchange of appropriate sentiments between the different branches of the service, light and pleasant camp, and messroom anecdotes of the campaign, and most eloquent music discoursed by the Navy-Yard band.

NEW BOOKS.

Richardsons' Marryat's Universal Code of Signals, published by Richardson Brothers, London. A new edition, handsomely got up, speaks well for the universal favor of this book. It is the language known and read by all men of the sea, and indispensable to every ship. It is superior to all other codes of signals, and none other yet produced can be substituted for it. D. Eggert & Son, 239 Pearl-street, New-York.

Sailing directions for South America, and the China Pilot, part 1., and Apendix No. 9, printed for the Hydrographic Office, Admiralty, London, can also be obtained from Messrs. Eggert & Son. They contain everything essential to the navigator on those coasts and islands.

THE MECHANIC'S MANUAL, by Oliver Byrne, published by J. M. Fairchild & Co., 109 Nassau-street, New-York, is a convenient pocket companion for all the variety of operative mechanics. It is illustrated by 42 wood cut diagrams, being alphabetically indexed, and rendered available for reference upon a variety of subjects.

BLUNT'S AMERICAN COAST PILOT AND SHEET ANCHOR.—E. &. G. W. Blunt, 179 Water-street, New-York, are well known by every body to be necessary to all navigators and young sailors, who find in them every thing necessary for the perfection of the rig and the performance of the ship, and will fill a *niche* in nautical literature.

LITHOGRAPHS.—More beautiful Lithographs from Currier, 152 Nassau-street.

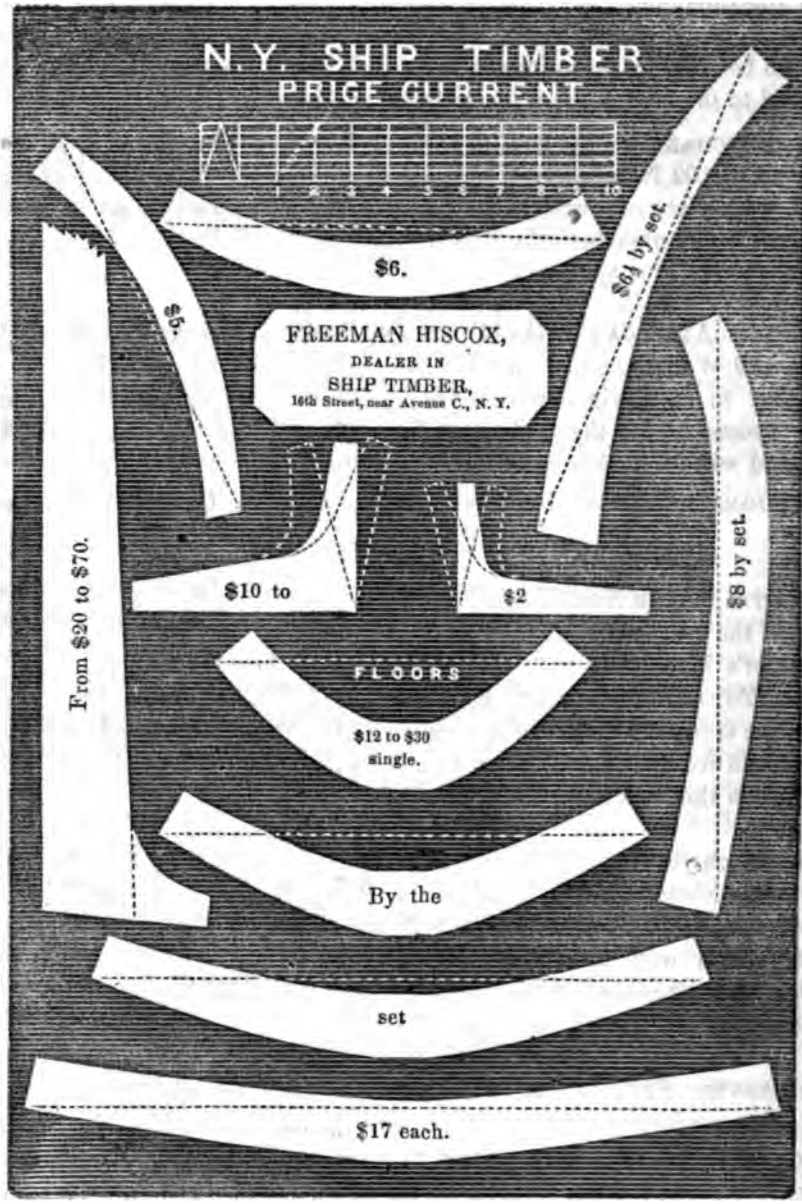
REGATTA OF THE NEW-YORK YACHT CLUB, OF JUNE, '54. Three splendid views of the competitors in their finest aspect.

Currier's is the place to find all such things in their best style.

THE YOUNG COMMODORE, by Goupil and Co., 366 Broadway, is a handsome fancy lithograph of a young sailor. The more of such things the better; and we are glad to know that these eminent print publishers have taken upon themselves the illustration of such fine subjects.

Among our exchanges, there is none more welcome than the Cleveland Commercial Gazette, published by S. S. Barry, Esq. This journal forms a complete statistical record of ship-building and nautical commerce on the Lakes, and is well worthy of increased patronage to which it is justly entitled. Its columns are full of such matter as is inseparably connected with with the interests of every commercial man.

PRESERVED FRUITS FOR SEA VOYAGES.—The sea voyager may now live within marketing distance of his own domicile, and while the mariner undergoes exposure and privation to exchange those commodities which bring luxury and refinement for others, he may not of necessity be confined to *hard bread and salt junk, as the staple stores of a sea voyage.* Thanks to the powers of inventive genius, the days of progress have already come, when fresh provisions, fruits and vegetables, may be kept in a perfect state of preservation by the use of hermetically sealed cans. SPRAT'S are admirably adapted for sea voyages, and may be had of WELLS and PROVOST, 321 Pearl-street, New-York.



A set floors and futtocks, $9 each Oak Flitch, 30 cents per cubic foot ; oak plank, $36⅔ to $40 per M.; deck plank, $35 per M. ; hackmatack timber, 25 cents per cubic foot ; chestnut, ditto ; cedar, 30 to 50 cents ; yellow pine timber, rough, 35 to 45 cents per cubit foot ; ditto, sawed, $28 to $30 ; yellow pine plank $20 to $30 per a

Oak Knees—5 inch $2 50 ; 6 inches, $5 ; 7 inches, $7 ; 8 inches, $10 ; 9 inches, $12 ; 10 inches, $15 ; above, $1 50 per inch.

Hackmatack Knees—5 inches, $1.50 ; 6 inches, $2 50 ; 7 inches, $4 25 ; 8 inches, $6 00 ; 9 inches, $8 ; 10 inches, $9 00 ; above, $1 per inch.

THE

U. S. Nautical Magazine,

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HOME!

OR THE HOUSE AND THE SHIP.

It is a truism which will not be questioned, either by the philosopher or the philanthropist, that the character of man may be learned from the work of his hands. The civilization of all past ages is made manifest by public and private buildings. If we turn our eyes eastward, we learn the submissive servility of the old Egyptians from the Pyramids; of the refinement and glory of the Athenians, we gather a knowledge from their remaining monuments and crumbling temples; of the character of the Druids, we learn something from the shapeless heaps of stones still traceable on English soil. If we look westward, and span the broad Atlantic, we discover the same principle, in lines still more legibly drawn; so that in every age, and in every clime, we find *the genius of civil architecture, bearing a domestic tinge*, moulding habits, tastes and feelings, and domiciliating the whole man into love for his abode. And this is equally true, whether we contemplate the *tent of the Arab*, in the eastern hemisphere, or the *wigwam of the Savage*, in the Western World. But as man, in a state of single blessedness, is but half developed, so the story of his dwelling is but half told; and while it is the province of the gentler sex to mould and ornament the interior of home into the quality of domestic enjoyment, we shall consider it a part of our province to examine the external of man's earthly home, in order that we may show his proclivities for following on the beaten pathway laid down in the musty folios of the past. In all that proclaims the present an age of progress and refinement, whether in literature or science, in political economy, religion or industrial art, the United States have shown to the world that they understand that, both in principle and practice, they have duties to perform, as well as blessings to enjoy.

They have imprinted the *Young American* stamp on every feature of art presented to the eye, excepting only civil architecture. To this department of science, she has added nothing worthy of a name; and from the earliest period in her brief and interesting history, down to the close of eighteen hundred and fifty-six, she has had no style of civil architecture which she can properly and justly point to as her own. In civil constructive art, we are content to follow rather than lead the Old World. We study to imitate rather than direct. While we are awed into reverence by the works of the past, we have no chart for the future. The Doric, Chinese, Ionic, Egyptian, Gothic, Indian, Moorish, Mexican, Norman, any foreign style of architecture is regarded as preferable to one of our own. *Shame on this servile policy.* In the mellowing sunbeams of American genius, civil architecture should be in the van of improvements, seeing that the extent and mould of our social progress depend very much upon *the utilitized architecture of that place we call home.* Can it be possible that our civil architects believe that this art has arrived at a state of perfection? With so few of the real principles of science developed in our dwellings—with so little that is conducive to health, happiness and longevity—are we content to be servile imitators in all coming time? Is the great thoroughfare of the commercial metropolis to be built and re-built without a single sample of American genius? Does not the beauties of geometrical science suggest some improveable change upon those mythological and antiquated styles, more in conformity with the laws of utility? How sadly have our civil architects mistaken newness and freshness in appearance, which characterize all our public and private buildings for improvement. We would fain endeavor to disguise our foreign proclivities beneath this flimsy gauze. Who that is familiar with the principles of geometry, can fail to discover the almost entire absence of this great and grand principle of constructive science in the buildings, both public and private, which are being constructed. We extend our structures higher, and dig the foundations deeper. But look at the design reader! how superficial! *massiveness is substituted for strength, and fragility for taste!* What has been the consequence? Why, simply this; the same principle has found an entrance in the dwelling, and there we see the imprint of frivolity and fragility on the interior of the building, and on the furniture and inmates which adorns it. We are not of the number of those who seek a change in architecture or art for the sake of change, but we seek improvement. There has nothing yet been done by man in the mechanical world but that which may be improved, either in *utility, durability, or cost;* and inasmuch as our habits and feelings are all tempered and tinted by our homes, how essential, how vastly important, that the homes of American soil should be, both in their external and internal appearance, and utility, in accordance with the spirit of progress and the genius of freedom. How long shall civil architects poison the public mind by their inklings after the models of despotism,

and seek to mould *our American homes*, the most cherished spots of earth, beneath the shades of antiquity. How long shall we be shackled to the days of yore? Of what avail in architecture is the history of the past, but to enable us to avoid its errors. If we would have this Republic stand out as a model, as a beacon to future ages and generations, in political economy, in science, religion, genius and art, *we must begin at home*, the place from whence spring all the finer affections of the human mind. If we would have our homes what they should be, place the *imprint of American genius upon their architecture*, and thus mould the feelings and habits of mothers, who imprint the most enduring lessons of home and habits upon their sons. That man has counted without his host, who thinks that the gentler sex are not influenced by the architecture of home. If we would make liberty the lasting habitant of America—make the homes of America, American homes; let their architecture tell the stranger the name of the territory upon which Americans dwell, lest they upbraid us with having nothing but an empty name to boast.

But home has a twofold bearing upon mankind, leading him to contrast its comforts with those of others. This duty belongs to commerce, and divides the labor of ameliorating man's condition, and teaches him that if progressive science demands a contribution from American genius, where the laws of taste and social enjoyment only are violated, significant indeed is the fact that nautical architecture holds within its grasp, not only those pleasures appreciable to the eye, but not unfrequently all that earthly affection holds dear to the human heart. While a mother and a father's kindliest affections cluster around the hearth-stone at home, a darling son who, in the bud of manhood, or in the noontide of his strength, may be domiciled in a fabric of geometric form, a structure of different mould; stamped with the impress of, and bounding like a thing of life, or floating upon the bosom of the mighty deep. Can it be a matter of surprise that mothers and sisters, as well as fathers and brothers, convey the cherished form of a vessel on the pupil of their eye? Does the reader wonder that there should be so little taste for improving the noblest fabric that genius and art has ever yet devised, when every intuition of the mind *is stationary at home, without a single progressive impulse?* When the boy has learned to venerate foreign architecture at home, can it be expected that he will repudiate the foreign imprint when he becomes a man? Is it a matter of surprise that nautical mechanics, as well as ship masters, have such crude notions in reference to the elements of adapted form? Is it not surprising that they have any taste or domestic genius, seeing that the spring from whence it flows, has been perverted at the fountain? But if utility should be the standard of beauty and taste in civil architecture at home, how much more essential as a standard in nautical architecture, in the construction of that fabric which constitutes the seaman's home; and can there be a department within the grasp of mechan-

ism, which promises so rich a harvest of happiness, as that which adds to the security of life on ship-board? We may talk of the ameliorating influences of society and home; but the man who adapts the ship to the dangers of the deep, has done more for his race than all the civil architects of antiquity, or the mere copyists of modern times.

It can scarce fail to be one of the marvels of this progressive age, to witness the diversified interests involved in the proper construction of ships, and yet so little progress in the path of safety, convenience, and certain profit embodied in their build. The world have become accustomed to regard ships like houses, as a depository for goods, or a hotel for the traveler; a floating warehouse for the conveyance of merchandize, or internally cellulated for the stowage of passengers; the shape of the vessel seems to be of little consequence, and indeed some ship-builders, even in modern times, have acted upon this principle of indifference, being seemingly unmindful that the safety of human life depended upon the action of their will, in reference to the form of the fabric they were about to build. Ignorance in civil architecture may cause a blunder, which may at most excite a smile without endangering life, limb, or property; but a blunder in marine architecture lies like a sunken rock beneath the surface, ready to engulph the unwary and confiding, in the hour when least expected. The chart of the dangers of the ship is of the most modern date, and yet one is quite as essential, as a chart of the voyage to be undertaken. It matters not as it regards the loss, whether it was from the dangers of the ship or from those of the sea, if we draw no lessons of profit for future reference; hence we discover that it is of some importance that we should inquire into the probabilities at least of engulphment, growing out of the insecurity of the fabric, whether that defect be one of form or construction, feature of hull or materials, outline or detail. And if the comforts and enjoyments of a home on the land may be enjoyed beneath the smile of foreign genius, may not safety and security be the heritage of our seamen under a healthy and cultivated national genius. But safety to life and property is not the only element of this home of the deep; comfort and intelligence are equally the heritage of the seaman and landsman. We either forget, or we never knew, that the same fire which cooked the seaman's food would furnish him with other assistance, such as steam could afford. We forget that *stability* is the first essential to comfort, whether at sea or on shore. We compel the mariner to become inured to the worst of all motions, the rolling of a ship at sea, subjecting him thereby to untold dangers, the misery of sea-sickness, with its thousand entailed discomforts. The lullaby of perfected art has spoiled a thousand homes, both on the sea and on the land.

It is a notorious truth that sea-sickness is the bane of ocean travel, and yet there is scarce a ship-builder to be found, who dares or cares to undertake to prevent it, notwithstanding the remedy lies within his reach. We

neither learn lessons of utility from the ocean as a field of study, nor yet of experience from the freighted wave as it bears homeward the fragment of (in some respects) a noble ship, torn piece-meal by the surging billow, *and inherent restlessness of uncongenial form.* The habitant of an earthly home is fixed in his hopes; however much he wanders in body and mind, his hopes are anchored there. Home to him is the haven of repose, a rest when weary limbs relax—it is a meridian from which he can always take an observation—the smiling sunshine of welcome greets him at the threshold. But to the mariner, oh! how different; every wave has a history, each billow may be a tombstone, and yet how grand this reflexive organ of incommunicable grandeur! How idle to think of comfort on ship-board, in the present crude state of science. The ship seems to hurl defiance at nature's laws, and is too often but a lap-dog in the jaws of a lion. When nature and art work together, how uniform their labors, how harmonizing their efforts! Let the thoughtful observer but cast any floating substance without cavity into the ocean, and then watch its motions—how gracefully it oscillates with the gathering and disbursive heaving of the sea. How suggestive! Let the hand of art now alter its form, and it becomes either more restless, or more stable, as its proportions are well or ill adapted to the inherent elements of the wave. The rolling motion of vessels is a quality of all others to be dreaded by ocean travelers, and not less to be deprecated by the mariner. It would be a difficult task to determine what other influence of the ocean wave is so destructive to the safety of the mariner's home, as that growing out of the absence of practical stability.

The rolling motion of a ship disturbs the equilibrium, not only of the vessel, but of all on board. It tends to disjoint the fabric in her bulkiest and most vital parts. It counteracts the force of the propulsory power. It is a serious drawback on the speed of the vessel, and serves to fill up the measure of misery entailed upon those who take up their abode on shipboard, whether for the purposes of pleasure or profit, subjecting them to all the disturbing influences of which the liveliest imagination can conceive, and not unfrequently compelling the unfortunate victim to take to the ship's side, for a purpose not to be named. And this list of miseries we are content, shall continue to be entailed upon the home of our dearest friends. Reader, if you have one drop of the milk of human kindness in your position, protest against it. Let your motto be progress, until the ho the land and the home on the sea shall be made equally comfortable that pertains to the dangers of the two fabrics, save only in the ma exposure to the pelting of the storm, which, although it may not vented, may be very much reduced by the aid of science.

THE INFLUENCES OF THE SUEZ CANAL UPON AMERICAN COMMERCE.

If we take a political view of this great enterprise, viz., the Suez Canal, in connection with the ameliorating influences of commerce itself, the subject widens its own orbit, while within the grasp of an ordinary mind, and we dwell with pleasurable emotions upon the determination of the genius of progressive science to pay a visit to its *birth-place in the East;* and, like a successful conqueror, who would relax his combative energies to feast the vision of his army on the enchanting scenes of *home*, even so science, the handmaid of commerce, visits the place of her nativity, for a no less hallowed purpose than *to bathe in the sunshine of home.* Surely Americans, not less than Europeans, should remember that it was from the East that the wise men came to pay homage to the infant Saviour and Redeemer of the world; and from that glorious era to the present, the march of science has been slowly, but steadily, westward, while its progress in the New World is still onward toward the setting sun, from whence the reflective rays of light and civilization *are now about to be thrown back upon the birth-place of bondage from the home of the free.* The commercial minds of the whole world are looking with intense interest toward the consummation of this great enterprise, and for the best of all reasons, in order that *commerce, East and West, may mingle its peaceful gratulations, and join in a jubilee of peace*, no more to engage in the art of war.

The scourge of war has hung, with wearied wing, upon the time-honored shores of antiquity, until its benighting influence has spread its gloomy pall over the sources of light and knowledge, dark as the drapery of death; above which the antiquated monarchs of the East have beheld the genius of liberty brooding over the light of intelligence, enabling the people of the Western World to discover, that they may not only study the science of government, to enable them to take care of themselves, but from which they have also learned that commerce is intimately interwoven with the universal blessings of peace. The immunities of commercial intercourse is one of the greatest political blessings that has ever fallen to the lot of man in his degenerate state. *Commerce and civilization being inseparable companions and twin sisters*, must ever maintain that equilibrium in the great fraternity of man which renders *them* the arbiters in national disputes. It is a settled truth that commerce is the great ameliorating engine, by which the blessings of science and art are to be diffused throughout the world; and while by geographical position, our facilities for diffusing commercial knowledge, in connection with our industrial proclivities, energy of character, and time habits, we have, to say the least of it, certainly no superior, an haps, no equal.

We, as a nation, cannot remain indifferent to a great commercial prise like the Suez Canal. If we take a philanthropic view of the su

we see prospectively what will, in all human probability, be done by the press of the United States toward ameliorating the benighted minds of 500,000,000 of those who inhabit India and China. This wondrous lever of might and power, illumines the horizon; and like the *aurora borealis*, sheds its scintillating rays of light across the benighted mind of man, strewing the seeds of thought, like the leaves of autumn, broadcast over minds now rendered hideous with the darkness of bigotry and superstition. When we remember the maritime exploits of Eastern monarchs in the remote ages of antiquity, as is but too dimly set forth on the page of history, we are led to wonder at the long apathetic sleep of the commerce of the East. We are led to inquire where is the enterprising spirit manifested by Pharo Necho, when he attempted a similar but less scientific undertaking than the one alluded to, as set forth in the loss of 120,000 of the lives of his subjects. However much chagrined at this defeat in engineering, he was more than paid by subsequent daring in successfully doubling the Cape of Good Hope with his fleet, and circumnavigating Africa in a three years' expedition. If we trace the history of Egypt, we shall be led to inquire what has become of the canal of Ptolemy, connecting the Nile with the Red Sea, more than 300 years subsequent to the first attempt, and although successful, it has been lost for want of commerce to sustain it. The early commerce of the East could not have been inconsiderable long anterior to the Christian era. What but the demand could have induced the construction of a Pharos, or light-house, the light of which could be seen 100 miles at sea.

But let the history of the past suffice. From whatever point of view we look at the operations of a canal across the Isthmus of Suez, we can discover nothing but universal benefit arising from it. With regard to Turkey, the Porte is aware, that the canal connecting the Red Sea with the Mediterranean cannot but be beneficial to his people, and must add prosperity and power by bringing Constantinople nearer to the Indian Ocean by 4,300 leagues, and by facilitating the communication with the holy places of Arabia, the source of the authority the Sultan possesses over his Mussulman population.

Turkey can rise from her present languor only by borrowing capital and commercial intelligence from the West. The prosperity of the East is intimately connected, at the present day, with the interests of civilization in general; and the most effectual means of working its welfare, in connection with that of humanity, is to *break down the bars that still separate individuals, races, and nations.* The work of civilizing the world was commenced with war, and must be completed by peaceful commerce. War will have well nigh played out its part with this last effort in the East.

If we take a geographical view of this vast enterprise, we can at once discover how important a part the United States have to act in the joint occupancy of its advantages. The following table will set forth the distance from

American and European ports to Bombay, by the Atlantic and by the Suez Canal, with the difference between the two routes :

DISTANCE TO BOMBAY IN LEAGUES — $\frac{1}{20}$ OF A DEGREE.

	Via Suez.	Via Atlantic.	Difference.
From New-York	3,761	6,200	2,439
" New-Orleans	3,724	6,450	2,726
" London	3,100	5,950	2,850
" Liverpool	3,050	5,900	2,850
" Amsterdam	3,100	5,950	2,850
" St. Petersburgh	3,700	6,550	2,850
" Havre	2,824	5,800	2,976
" Bordeaux	2,800	5,650	2,850
" Lisbon	2,500	5,350	2,850
" Cadiz	2,224	5,200	2,976
" Marseilles	2,374	5,650	3,276
" Trieste	2,340	5,960	3,620
" Malta	2,062	5,800	3,778
" Constantinople	1,800	6,100	4,300

With such figures before us, comment is unnecessary. The United States are equally, if not even more deeply interested, than the more Easterly nations, inasmuch as they are the most commercial nation on the globe, as well as the most advanced in nautical science. When, therefore, an enterprise presents itself to the public mind which shortens the distance between New-York and Bombay 7,318 miles, it cannot long remain a matter of doubt about our embarkation. We are glad to know that already steps have been taken to enjoy its benefits.

SCARCITY OF SEAMEN.

It is universally acknowledged, that the number of seamen belonging to the United States bears no proportion, either to the commercial demands of maritime States, or to the number engaged in sea service. A variety of remedies have been proposed, while the smallest few, only, have approached the subject with a just appreciation of its wants. That much blame is attributable to the apathy of the Government in this matter, few commercial men will undertake to deny. It is not our purpose in this connection to do more than show that the number of seamen required for our increasing commerce, although far beneath the standard of actual requirement and want, *may not be justly apportioned, either by the length of keel, or the number of licensed or registered tons.* While every vessel should be provided with a just and proportionate number of seamen, reform in another direction will do much toward the removal of the evil complained of, and render the construction of ships, not only a more lucrative investment for capital, but will add greatly to the safety of human life. In every other department of

commercial and industrial labor, the drudgery of physical effort is being dispensed with to the widest extent possible, and the results have been favorable in the greatest degree; while on shipboard, to manual labor and muscular power, the service on shipboard is entirely subjected. It requires neither a peculiar kind, or enlarged amount of observation to discover, that in the economy of dollars alone steam is cheaper than muscular force. The daily consumption of fuel at the galley, if properly applied, would perform a very considerable part of the manual labor of a vessel, and with a small additional supply of combustive capital, would produce the most astonishing results, not only in the performance of the most laborious service, but in diminishing its cost. The power of steam knows no exhaustion, it fears no danger, is ever subordinate; its powers of endurance are always the same, whether beyond the soundings of the deep sea-lead, or on ice or iron bound coasts, on the equator, in the Frigid or Torrid Zone—it requires no other stimulant than its daily rations of combustive food. Its capacity for labor without fatigue is not less astounding; its respirations, so far from being greater on the line, are even less than in the polar circles; its thirst is more readily satisfied at the equator than in the arctic regions. With a small steam engine attached to, and forming part of the galley, and costing about the amount of a month's advance to the crew of a liner, by far the largest bulk of the ship's drudgery may be performed, promptly, effectively, and in less time than by muscular power. A galley, or deck engine, is a *Hercules* in the hour of need; and although its attractive powers are too great for the magnet, which should disqualify it for the honors of a watch at the helm, yet there is no other service in the evolutions of managing the vessel, whether at sea or in port, which may not be more effectively and economically performed by steam than muscular power. With such advantages as we have proposed, out of a crew of 40 men, 15 only would be required, and in many cases even less, while greater efficiency would be secured in the hour of peril. Several efforts have been made to do ship service by steam; but these, although successful, were more expensive, and less efficient than we are inclined to believe they should be. We know of no reason why the principal sails, at least, may not be reefed and furled by steam-power, quicker, cheaper, and with less risk to human life. *Excelsior* is a motto nowhere more applicable, and certainly, nowhere more needful, than in the vocabulary of seamanship. *Humanity*, *safety*, *comfort*, *convenience and economy*, all say onward in the path of progress, in managing, as well as building, this mistress of commercial intercourse among men. Let us not forget that opinion rules the world, and opinion is modified by advancing culture; hence we learn that the habits and maxims of one age become barbarisms, and are obsolete in the next.

[For the U. S. Nautical Magazine and Naval Journal.]

MARTIN'S BOILERS.

BY ALBAN C. STIMERS.

The general characteristics of the structure of these boilers are described by saying that they have vertical tubes placed over the furnaces, with the water inside them, the products of combustion passing up from the back end of the furnace and returning through the tube-box, outside the tubes, to the front of the boiler, where they enter the smoke-pipe. The shell is similar in form and proportions to that required by the ordinary "Horizontal Tubular," or by the "Lamb & Summer's Flue Boiler."

It has been the practice of late years to arrange these latter athwartships, fronting each other, with a fire-room between, running fore and aft, common to both sides, enabling one fire-room to perform the duties of two, and incidentally keeping all the fire-room, except that under the smoke-pipe, beneath the hatches which supplied it with air.

Boilers, with the water inside the tubes, had been used with great success for several years in the Collins line of mail-steamers, in which line Mr. Martin served for two years as chief-engineer. These boilers had the tubes placed back of the furnaces, and on the same level with them. There being one furnace above another, the tubes were necessarily very long; those in the wings being five feet, and those back of the middle furnaces five feet six inches.

Mr. Martin wished to combine the advantages of the great evaporative powers of these boilers with those of the fore and aft amidship fire-room, and the boiler he has patented is the result of this combination.

For many years, marine boilers had large flues for conveying the heated gases from the furnaces to the smoke-pipe, the flues being placed in tiers above each other, with connections at the ends, the products of combustion passing and repassing through them the whole length of the boiler, which, in some cases, was as much as forty feet.

After Stephenson had succeeded so well in the application of small tubes to the locomotive, that very ingenious marine engineer, Mr. Seaward, of London, applied them to the marine boiler, by placing them over the furnaces instead of back of them, as had been done in the locomotive. The result was, that an equal amount of steam was generated, with a given amount of fuel, and the boiler occupied very much less space than the flue boiler had done.

Difficulties however arose in practice, which were so great as to prevent as general an adoption of the improvement as might otherwise have been expected.

These difficulties were: That saline deposits accumulated to a great extent among the tubes. The tubes burned rapidly out, so that at the end of every

short trip many tubes had to be withdrawn and new ones put in, and great labor was required to remove the scale, which of necessity was difficult of access. The boilers generally foamed badly also, which gives a great deal of trouble to those in attendance, to say nothing of the loss of fuel occasioned by the large quantities of water, which, mixed with the steam, passes through the engines, requiring fuel to heat it, but giving out in return no mechanical effect. Again, it was found that the temperature of the smoke-pipe was much higher than was necessary for the purposes of draft, however great the proportion the heating surface might be when compared with the amount of coal burned. All attempts to remedy this defect in this type of boiler have thus far proved futile. The reason is very easily arrived at if we but look at things in their true light. The velocity of the heated gases in a steam-boiler during their passage from the furnaces to the smoke-pipe varies from 20 to 40 feet per second. There is, therefore, no time for gravitation to act to any appreciable extent in changing the position of the particles which have given out their heat with those which are still hot, while traversing a tube six or eight, or even twelve feet long. It is only, then, those particles which have been in contact, or nearly so, with the metal of the tube, that have given out their heat, the central portion of the tube being as hot at one end as at the other.

The same thing was true of the old-fashioned flue-boiler. There, however, the gases did not enter the smoke-pipe directly from the first run, but mixed themselves up, and became turned inside out, as it were, in the connection between the different tiers of flues, so that at the commencement of the second run, the temperature of the outside was a mean of the whole. The great advantage of this mixing up is shown in the most marked manner by the fact, that boilers having three tiers of flues will usually evaporate 6½ pounds of water to one pound of coal, while one with only two tiers will only evaporate 6 pounds, there being the same aggregate length of flue in both cases.

In boilers which have vertical tubes with the water inside of them, the tubes are placed in longitudinal rows, having a slight zigzag to them; the consequence is, that the stream of heated gases is broken up and mixed to an extent that brings all the heated particles in direct contact with the metal —in fact, the passage of each tube is similar to the passage of the connection of the flue-boiler; and as there is usually thirty or thirty-five tubes in each longitudinal row, a much more perfect mixture can be obtained than could be hoped for in any modification of the flue principle. There is also an impression with many that, as the heat has to pass through the metal of the tube in the same direction as that in which it has reached it, instead of at right angles to the direction of the motion of the gases, as in the flue or horizontal tubular boiler, it passes through it more readily. This would real be the case if heat were a ponderable body and was capable of momentum as it is, every one can enjoy his own opinion upon the subject.

The foregoing remarks are sufficient to explain why, with the horizontal tubular boiler, a large per centum of the heat must necessarily pass off up the smoke-pipe, while by reversing the order of things, and placing the water on the inside, the heat may all be transmitted to the water, with the exception of just sufficient to create a draught, which only requires a temperature a little above that of the steam and water within the boiler, if the proportions of calorimeter, heating surface, and amount of coal burned, are good.

It is not only necessary, however, to have the heat of the fires reach and pass through the metal of the tubes; it is equally so to have water there to receive it. It is impossible, in practice, to have *water alone* in contact with all the heating surface of *any* boiler while generating steam rapidly, but failing that, we must endeavor to have as large a proportion of water, compared to the steam, as will prevent the temperature of the metal rising much above that due to the pressure within.

The steam is always formed from particles of water which are in contact with the heating surface, and until it is forced away from the point where it was generated and replaced by water or other steam, it will remain in contact and rise in temperature, and the temperature of the metal will never be sensibly different from the recipient, whether it be water or steam, unless it is covered with non-conducting deposits. However rapidly the steam is forced away from the heating surfaces and replaced by water, there must always be some steam in contact with some part of the heating surface; but as has before been remarked, the endeavor must be to get it away as soon as possible. In nearly all works upon boilers, it is taught that it is necessary to so arrange the water compartments that the steam may rise readily to the surface *through* the water; nothing is said of the necessity for currents of water both up and down. Indeed, Mr. Robert Armstrong, in his "Elementary Treatise on Steam Boilers," page 110, recommends precautions which "give free egress to the steam without undue or too rapid a circulation of the water to prevent a good deal of the priming." I must except from this class of writers, Mr. C. W. Williams, who has given us an excellent treatise upon the intestinal currents of water in steam-boilers, in his work entitled, "The Combustion of Coal and The Prevention of Smoke."

Now, if a boiler could be so arranged that the water would be quiescent, the steam only rising, it would necessarily follow that the salt which would be left after the evaporation of the water, would accumulate in the immediate vicinity of the evaporation, and that blowing off at any one point would not remedy the evil, as the water, after entering at the feed-pipe would naturally take the shortest and most direct course to all parts where there was a demand; and, as one-half of all the water which is pumped into a marine boiler has to be blown out, there would be a large stream taking the most direct and easy course from the feed to the blow-pipe. In practice, howe-

ever, it is, fortunately, only possible to approximate to this state of affairs; as when a body of water is heated in one part and not in another, or more in one part than in another, that which receives the most heat becomes specifically the lightest, and it is a law with fluids that the heaviest portion will descend and cause the lighter to rise. This is not, however, done by division of particles, but bodily, the descending currents being entirely apart from the ascending, just as much in the case of water as in the heated air of a smoke-pipe. No one ever supposes for a moment that cold air will descend through the interior of a smoke-pipe and cause the heated air to rise at the same time in the same pipe; while in the case of boilers, we see no provision made for anything but "the ascent of the bubbles of steam to the surface," and the water which is to supply its place is expected to descend through the same space at the same time. Now, as the force of gravity is the prime-mover in creating the currents, and having only a *difference* of specific gravity to act upon, it is easy to so arrange the flues or tubes as to materially obstruct what would naturally be very rapid currents, until they become, on the contrary, very sluggish, and, to give them a direction which will nearly, if not quite, prevent the water from reaching some of the heating surfaces. When this is the case, as the force which causes the steam to rise is the same as that which drives up the water, it being only multiplied in degree, the steam must necessarily remain some time, if not altogether, in contact with the metal where it was generated. The consequence is, that there are parts in all those boilers which are built without any provision being made to facilitate these currents of water, which become filled with salt, and other parts which are not quite so unfavorably situated, have abundant deposits of the muriate of lime or "scale." In those parts where the steam at first formed is not forced away at all, or if forced away, always by currents of *steam*, although no scale is deposited, from the fact that no water is evaporated, the steam becomes surcharged until the temperature of the metal and steam in contact reaches the point at which the oxygen in the steam has a stronger affinity for the iron than it has for hydrogen, and the steam becomes decomposed and the iron is oxydised, or "burnt," as the oxydation of metals at a high temperature is very properly termed. This burning out is never caused by the heat alone—iron is melted without being burnt or injured. It is only when there is great heat on one side, and steam highly surcharged and ready to part with its oxygen on the other, that it occurs. The tops of flat crown-sheet furnaces suffer very much in this way, as do also many of the tubes in a horizontal tubular boiler, as has been already explained, where, as is generally the case, they are placed very nearly together. The steam-chests of these boilers are also worn rapidly away in the same manner, on account of the great heat of the smoke-pipe passing through it, the cause of which has already been given.

In the boilers with vertical tubes, the water rises without the many obstructions which the great number of tiers of tubes present in the other type. This is proved by there being a much greater draught with the same carolimeter and temperature of smoke-pipe in the horizontal tubular boiler than there is in the vertical tubular with water inside the tubes; and to create a rapid upward current, wide water-spaces are left between the tube-boxes, the velocity of the descending current multiplied into its weight, being the force which acts in creating the upward current. In the boilers with the long tubes, the steam which is formed in the lower portion of the tube being generated next to the metal, remains in contact with it during the whole ascent, increasing in amount as it approaches the top, so that although the central portion of the upward stream may be nearly or quite solid water, that which is in contact with the metal may be all steam. In Mr. Martin's arrangement, the greatest length of tube yet used is three feet six inches; and if we allow that as much steam is generated by the sides and tops of the furnaces, as by the lower two feet of the long tubes, there will be the same amount of steam at the top of the tube in both cases; but with the short tube the steam which enters with the water at the bottom fills the central portion as well as the outside, and will remain there during the ascent. There is, consequently, a much greater proportion of water in contact with the metal at the top of the tube in Martin's arrangement than in the other, where the same velocity of current is kept up. In practice, however, the water-spaces have been made considerably wider than those in the first Collins' steamers, which have the long tube, double furnace variety. Those in the "Adriatic," which has the new boiler, being six and a-half inches, while those just referred to are only five inches.

It is to the fact of their having a larger proportion of water in contact with the heating surfaces, that I ascribe their superior evaporating powers, as proved by the results obtained in the new frigate "Merrimac," which has the new type.

The average evaporation of the "Arctic's" boilers during the time Mr. Martin was her chief-engineer, as published in the Franklin Journal, in 1853, by Mr. Isherwood, was 7.6 lbs. of water to one pound of coal, measuring it by the number of cylinders full of steam, the pressure being arrived at by indicator cards having been regularly taken.

The average performance of the "Merrimac's" boilers during a run of 46 hours, from Boston to New-York, in August last, measured in the same manner, was 8.49 lbs. of water to one pound of coal.

The draught was so sluggish in the "Merrimac," that the coal could not be burned to good advantage, and a large per cent. went overboard in the form of ashes. On the other hand, the defect which destroyed the draught caused the heated gases to give out more thoroughly their heat; and it is probable that an improvement in the draught, which would enable more coal to be burned,

and burned better, would, at the same time, carry off more of the heat in the smoke-pipe, and the evaporation per pound of fuel would not be much increased. I will explain how this deficiency of the draught was occasioned in the "Merrimac." Mr. Martin's experience with vertical tubular boilers, with the horizontal rows zig-zagged, led him to the conclusion that in computing the calorimeter, it was necessary to count only upon the breadth between the rows considered as a straight passage, and not upon the whole distance between two tubes in the same cross row, that is, the amount of departure from a straight line must be deducted from that distance; and in getting up a general design, he placed the tubes $1\frac{3}{8}$ inches apart in the same cross row, and zig-zagged them in the longitudinal rows $\frac{3}{8}$ of an inch, this left one inch clear space between the rows, which he computed as calorimeter. Now, any increase in the zig-zag not only deducts directly from the available calorimeter, but as it causes a greater vibration of the current, a greater resistance is sustained, and a greater breadth of clear space would be necessary to maintain the same velocity of draught. At the works where the machinery of the "Merrimac" was built, they did not appear to have a clear idea of this, and the tubes, although placed the same distance apart in the same cross row, were zig-zagged $\frac{5}{8}$ of an inch, leaving but $\frac{3}{4}$ of an inch clear space; the boilers, in consequence, had only three-fourths the calorimeter Mr. Martin had intended, and this was vitiated by the great amount of zig-zag. The result was as above given; the draught was very sluggish. As a proof that the above is a sufficient explanation of the difficulty, the boilers of the new frigate "Minnesota," the machinery and boilers of which were designed by Mr. Martin in person, and built at the Navy-Yard at Washington, where, of course, his rules and directions were strictly adhered to, had plenty of draught. Her engines having averaged 51 and 52 revolutions per minute during the last two hours respectively of her run from Washington to Philadelphia, on the 4th of August last, 50 revolutions per minute only having been calculated for; and an equal number of revolutions was made with the same facility in the "Wabash," on her run from this port to Portsmouth, New-Hampshire, on the 1st October ultimo.

Before these boilers were tried, it was feared they would foam badly. An idea prevailed with many, that as the tubes were placed directly over the furnaces, and had, therefore, to convey all the steam generated at the sides and tops of them to the surface, the velocity would be so great as to throw the water up with the steam and cause foaming; but that great test of all speculations, actual practice on a working scale, proved this to be a mistake. Indeed, the engineers of the "Merrimac," "Susquehanna" and "Wabash" have been agreeably surprised to observe the great, and, I may say, practically speaking, the entire absence of this almost universal defect.

I attribute a part of their superiority in evaporative powers to this fact. The truth is, that foaming, as well as most of the ills to which marine

boilers have been heir to, as heretofore constructed, is attributable, in a very great degree, to the want of a rapid circulation of the water through the heated portions.

Rapid circulation prevents one part from becoming more salt than another, and, consequently, if the salinometer shows a proper degree of freshness, no scale of any account will be found in any part, while every engineer knows that in the horizontal tubular, and in many of the old fashioned flue boilers, where the flues were placed pretty closely together, there would always be places where the scale would be found in abundance, however fresh the water had been kept, as shown by the salinometer. Again, a rapid circulation and a conformation that will bring the water as it flows, in actual contact with all parts of the heating surfaces, will prevent the surcharging the steam to an extent that will destroy the metal, causing a necessity for "soft patches," new crown sheets, new tubes, &c.

Mr. Martin makes the tops of his furnaces semi-circular, and as there is about twelve inches space between the crown sheet and the lower tube sheet for the purpose of enabling them to set a new tube when required, abundant facility is afforded for the water to touch every part of this, the most critical portion of the boiler; and as the current is rapid, the great amount of steam formed at this place does not remain long enough for the iron to become injuriously heated. The heating surface required for a given power can be placed in so much less space in this arrangement than in any other which has been before adopted, that large water spaces can be well afforded without making the aggregate space occupied large.

It appears, then, that this boiler possesses two advantages over the types heretofore used, and upon these two depend all those excellencies for which marine engineers have been so long and so laboriously seeking.

These are,

1st. Greater facilities for mixing up the heated gases and bringing all the particles in direct contact with the *heating* surfaces; and

2d. Greater facilities for arranging a large amount of heating surface in a small space, and retaining a system of rapid currents which brings the *water* in direct contact with all the *heated* surfaces.

SHIP VENTILATION.—To ventilate a ship properly, is to make a passage at the base of the hold, for the free distribution of pure air, and to allow the noxious vapor to escape out of the hatches. The philosophy of this seen by holding a lighted candle at the top of the door of a close without fire, when the flame will be blown outward toward the hal candle be held at the bottom of the door, the flame will be drawn i

ON THE DEPTHS OF THE OCEAN.

BY LIEUT. MAURY.

Until the commencement of the plan of deep sea soundings, as now conducted in the American Navy, the bottom of what the sailors call "blue water," was as unknown to us as is the interior of any of the planets of our system. Ross and Dupetit Thouars, with other officers of the English, French, and Dutch Navies, have attempted to fathom the deep sea; some with silk threads, some with spun yarn, and some with the common lead and line. All of these attempts were made on the supposition that when the lead reached the bottom, either a shock would be felt, or the line, becoming slack, would cease to run out.

The series of systematic experiments recently made on this subject shows that there is no reliance to be placed on such a supposition, for the shock caused by striking bottom cannot be communicated through very great depths, and therefore it does not follow that the line will become slack and cease to run out when the plummet reaches the bottom. Furthermore, the lights of experience show that, as a general rule, the under currents of the deep sea have force enough to take the line out long after the plummet has ceased to do so. Consequently, there is but little reliance to be placed on deep sea soundings of former methods, when the depths reported exceeded eight or ten thousand feet.

Attempts to fathom the ocean, both by sound and pressure, had been made; but in "blue water" every trial was only a failure repeated. The most ingenious and beautiful contrivances for deep sea soundings were resorted to.

By exploding heavy charges of powder in the deep sea, when the winds were hushed and all was still, the echo or reverberation from the bottom might, it was held, be heard, and the depth determined from the rate at which sound travels through water. But, though the explosion took place many feet below the surface, echo was silent, and no answer was received from the bottom. Ericsson and others constructed deep sea leads having a column of air in them, which, by compression, would show the aqueous pressure to which they might be subjected. This was found to answer well for ordinary purposes; but in the depths of "blue water," where the pressure would be equal to several hundred atmospheres, the trial was more than this instrument could stand.

Mr. Baur, an ingenious mechanician of New-York, constructed, according to a plan I furnished him, a deep sea sounding apparatus. To the lead was attached, on the principle of the screw-propeller, a small piece of clock-work for registering the number of revolutions made by the little screw during the descent; and, it having been ascertained by experiment in shoal water that the apparatus in descending would cause the propeller to make one revolution for every fathom of perpendicular descent; hands provided with the power of self-registration were attached to a dial, and the instrument was complete. It worked beautifully in moderate depths, but failed in blue water, from the difficulty of getting it down if the line used were large enough to give the requisite strength for hauling up.

But, notwithstanding these failures, there was encouragement, for greater difficulties had been overcome in other departments of physical research. Astronomers had measured the volumes and weighed the masses of the most

distant planets, and increased thereby the stock of human knowledge. Was it creditable to the age that the depths of the sea should remain in the category of an unsolved problem? Beneath its surface was a sealed volume, abounding in knowledge and instruction that might be both useful and profitable to man. The seal which covered it was of rolling waves many thousand feet in thickness. Could it not be broken? Curiosity had always been great; still, neither the enterprise nor the ingenuity of man had as yet proved itself equal to the task. No one had succeeded in penetrating, and bringing up from beyond the depth of two or three hundred fathoms below the aqueous covering of the earth, any specimens of solid matter for the study of philosophers.

The sea with its myths had suggested attractive themes to all people in all ages. Like the heavens, it affords an almost endless variety of subjects for pleasing and profitable contemplation, and there has remained on the human mind a longing to learn more of its wonders, and to understand its mysteries. The Bible often alludes to them. Are they past finding out? How deep is it? and what is at the bottom of it? Could not the ingenuity and appliances of the age throw some light upon the question?

The government was liberal and enlightened; times seemed propitious; but where or how to begin, after all these failures, with the interesting problem, was one of the difficulties first to be overcome.

It was a common opinion, derived chiefly from a supposed physical relation, that the depths of the sea were about equal to the heights of the mountains. But this conjecture was, at best, only a speculation. Though plausible, it did not satisfy. There were, in the depths of the sea, untold wonders and inexplicable mysteries. Therefore the contemplative mariner, as in mid-ocean he looked down upon the gentle bosom of the sea, continued to experience sentiments akin to those which fill the mind of the devout astronomer when, in the stillness of the night, he looks out upon the stars and wonders.

Nevertheless, the depths of the sea still remained as fathomless and as mysterious as the firmament above. Indeed, telescopes of huge proportions and of vast space-penetrating powers, had been erected here and there by the munificence of individuals, and attempts made with them to guage the heavens and sound out the regions of space. Could it be more difficult to sound out the sea than to guage the blue ether and fathom the vaults of the sky? The result of the astronomical undertakings* lies in the discovery that what through other instruments of less power, appeared as clusters of stars, were, by those of larger powers, separated into groups; and what had been reported as nebulæ, could now be resolved into clusters; that in certain directions the abyss beyond these faint objects is decked with other nebulæ, which these great instruments may bring to light, but cannot resolve; and that there are still regions and realms beyond, which the rays of the brightest sun in the sky have neither the intensity nor the force to reach, much less to penetrate.

So, too, with the bottom of the sea, and the knowledge-seeking mariner. Though nothing thence had been brought to light, exploration had invested the subject with additional interest, and increased the desire to know In this state of the case, the idea of a common twine thread for a so line, and a cannon-ball for a sinker, was suggested. It was a beauti

* See the works of Herschel and Rosse, and their telescopes.

ception; for, besides its simplicity, it had in its favour the greatest of recommendations; it could be readily put into practice.

Well directed attempts to fathom the ocean began now to be made, and the public mind was astonished at the vast depths that were at first reported.

Lieut. Walsh, of the U. S. schooner *Taney*, reported a cast with the deep sea lead at thirty-four thousand feet without bottom. His sounding line was an iron wire more than eleven miles in length. Lieut. Berryman, of the U. S. brig *Dolphin*, reported another unsuccessful attempt to fathom mid-ocean with a line thirty-nine thousand feet in length. Capt. Denham, of H. B. M. S. *Herald*, reported bottom in the South Atlantic at the depth of forty-six thousand feet; and J. P. Parker, of the U. S. frigate *Congress*, afterwards, in attempting to sound near the same region, let go his plummet, and saw a line fifty thousand feet long run after it as though the bottom had never been reached.

The three last named attempts were made with the sounding twine of the American Navy, which has been introduced in conformity with a simple plan for sounding out the depths of the ocean. It involved for each cast only the expenditure of a cannon-ball and twine enough to reach the bottom. This plan was introduced as a part of the researches conducted at the National Observatory, and which have proved so fruitful and beneficial, concerning the winds and currents, and other phenomena of the ocean. These researches had already received the approbation of the Congress of the United States; for that body, in a spirit worthy of the representatives of a free and enlightened people, had authorized the Secretary of the Navy to employ three public vessels to assist in perfecting the discoveries, and in conducting the investigations connected therewith.

The following circular order to the commanders of all vessels of the Navy has been issued, and is now in force:

CIRCULAR.

Bureau of Ordnance and Hydrography.

SIR,—Your attention is particularly invited to the accompanying directions relative to deep sea soundings.

You will take care that they be diligently and faithfully carried out on board the vessel under your command.

You will report from time to time, to this Bureau, the latitude, longitude, depth, drift, time, and all the circumstances connected with each cast, whether successful in reaching bottom or not,—stating the kind of sinker used, its weight, and whether the large or small twine was used.

This order is to supersede that of June 1st, 1850, on the same subject, and the directions given at pages 70 and 71 of Maury's third edition of *Sailing Directions*, so far as they may conflict with these.

Respectfully, your obedient servant,

C. MORRIS, *Chief of Bur*

INSTRUCTIONS FOR USING THE SOUNDING TWINE.

The twine for deep sea soundings is of two sizes; the smaller tended to be used when no attempt is made to bring up specime bottom. It is calculated to bear sixty pounds weight in about seven hundredths of an inch in diameter, and measures the pound. It is marked at every hundred fathoms, and fu containing 10,000 fathoms each.

The larger size is to be used for bringing up specimens. It is calculated to bear a weight in the air of 150 pounds; it is about one-tenth of an inch in diameter, and measures about eighty fathoms to the pound. It is furnished on reels of 5,000 fathoms each.

It is desired, as a general rule, to have one deep sea sounding only for every space of five degrees square, on a chart which is constructed with its meridians and parallels drawn only for every five degrees of latitude and longitude respectively.

The spaces in which deep sea soundings have been made in the Atlantic Ocean are shown in plate 14. It is desirable to have the soundings on that plate with a note of interrogation after them, verified.

Attempts should be made to bring up specimens from the bottom whenever practicable; for this purpose the large twine should be bent on to Brooke's deep sea sounding apparatus.

A small stellwagen cup attached to the bolt of Brooke's lead, may be substituted with advantage for the arming.

After a little experience, the officer charged with the making deep sea soundings will, it is thought, acquire skill enough, especially when the sea is not more than 2,000 fathoms deep, to bring up specimens with Brooke's apparatus and the small twine.

When the small twine is used without a Brooke's apparatus, double it for the first 200 fathoms, and use two 32 lb. shot as the sinker; when the shot reaches the bottom, the boat may ride by it, until the surface current shall be determined, when the line should be hauled in until it parts.

The sounding should in all cases be taken from a boat, and not from a vessel. The boat with its oars can be kept over the line, whereas the vessel will drift.

For deep sea temperatures, a self-registering metallic thermometer should be used, especially at great depths. When no metallic thermometer is on board, then a resort to a non-conducting cylinder for bringing up the water should be had. Approved, C. MORRIS.

Dec. 17*th*, 1853.

DIRECTIONS FOR TAKING DEEP SEA SOUNDINGS.

The information acquired from experience upon the subject of deep sea soundings, enables me to say that I now consider it as practicable to fathom the greatest depths of the ocean, whatever they may be, as it is to sound one of our bays or harbors.

Lieut. Walsh's experiments in the *Taney* satisfied me that no reliance could be put upon results obtained by sounding at great depths with wire. His great sounding, therefore, was most valuable and important, for it led the way to the use of twine.

It was thought that, upon the new plan, the common wrapping thread or twine used in the shops would answer for deep sea soundings. For it was supposed that bottom might be reached always and at any depth, especially in calm weather, simply by fastening the end of the twine from such a reel to a common 32 lb. shot, throwing the shot overboard, and then paying out the twine as fast as the shot would take it from the reel. When th reached the bottom, it was supposed that the line would stop runnir and then, cutting the thread, and seeing how much was left on the r depth would, it was thought, be ascertained.

This required the loss of the shot and the twine, but they were ch

it was supposed that a mere thread, which had strength to hold together, would be strong enough.

But the experiments of Lieut. W. Rogers Taylor, on board the *Albany*, Capt. Platt (a full account of which is contained in the fifth edition of this work,) proved these notions to be wrong. The casts for deep sea soundings, made on board that vessel, showed that it required twine of a considerable strength for the purpose.

The existence of a physical state of things which bears upon the question was also suggested by Taylor's experiments; and that is, the probable existence in all parts of the sea of one or more under currents. In other words the deep sea soundings appear to confirm what I have been endeavoring to maintain in the chapter on the "Saltness of the Sea," and elsewhere, viz.: That the ocean has its system of circulation so ordered that its waters, whether at the surface or in the depths below, are seldom or never at rest; that this circulation is all-pervading and perpetual, and is as constant in the horizontal as it is in the vertical direction.

This system of circulation commenced on the third day of creation, with the "gathering together of the waters" which were "called seas," and doubtless will continue as long as sea water shall possess the properties of saltness and fluidity.

The confirmation which the experiments in sounding out the depths of the ocean seems to afford for this conjecture, is derived from the inference, in the first place, that I draw from the experiments which, in a few cases, have been made in sounding at the same place, first with one and then with two 32 lb. shot as a sinker. The results as to depth have been accordant; but invariably the depth, as given by the *two* shots, is a little less than by one. The two shots sink faster than the one; the bight of the line in the former case, therefore, is not exposed so long to the action of the under currents; consequently it is not swept so far out of the perpendicular with the two as it is with the one shot.

In the next place, a degree of confirmation as to the correctness of this conjecture is afforded by the fact that, though the shot may reach the bottom, the line has, in no instance, ceased for any considerable length of time to run out; and, moreover, that after the shot has landed, there is, at very great depths, such a force brought upon the line, if it be held, as always to part it.

Imagine a line two, or three, or four miles long, hanging perpendicularly in the ocean,—that the plummet to which it is attached has reached the bottom,—and that there be one or more under currents moving in opposite or different directions, and operating upon it. They would operate with what sailor's call a "swigging force," and that too with a power which no line would be strong enough to withstand for any considerable length of time.

Thus the importance of strong twine was pointed out; and it was also discovered that, to know when the shot had reached the bottom, it was necessary to time the intervals which were occupied by given lengths of line in going out. The most convenient lengths for this purpose are lengths of 100 fathoms each; and as mark after mark which denotes these 100 fathoms' lengths passes from the sounding reel, the time per watch is as carefully noted by the officer who makes the sounding, as it should be if he were taking sights for the chronometer.

The soundings by the *Albany* and others were made from on board ship. In the first place, it was rarely that an opportunity favorable enough for a good cast from on board occurred. Moreover, the complaint was almost

universal throughout the service of bad twine. Attempts to sound from the vessel were so often frustrated by the parting of the line, that officers were very much deterred from the trial. These failures were disheartening.

Furthermore, when the ship was hove to for the purpose, as the *Albany* frequently was, there was not only the drift of the ship to be taken into the account, but the question as to the result still remained to perplex. Had the bottom been reached? And if so, was there any certainty that the depth was what the experiments seemed to indicate? Certainty as to this was greatly impaired by inequalities in the times of running, caused by the change in the rate of motion of the vessel as she "came up and fell off."

Such was the amount of our experience upon the subject of deep sea soundings, when Lieut. S. P. Lee was ordered to the command of the *Dolphin*.

With characteristic energy he set about making preparations for this new service. His first business was to give the twine, furnished for deep sea soundings, a thorough examination. He carefully overhauled, tested, and tried several hundred thousand fathoms. Much of it he found so defective that it had to be rejected, and the vessel detained until better could be procured. It was well he did so; for although the line, with which he proceeded to sea, was better than that which was rejected, nevertheless, experience proved that much of it, though new, was not strong enough. Its average strength was not even then sufficient to bear a weight of fifty-five pounds, nor was it all of the same size, as it should have been.

When he got to sea, he determined not to sound from the vessel at all; but to use a boat for sounding, altogether.

A BOAT SHOULD ALWAYS BE USED.

At first he encountered many unexpected difficulties; but with industry, his ingenuity, and perseverance, these, one after another, were overcome until the way was made plain, and the operation stripped of a vast amount of the uncertainties which had impaired, to a greater or less extent, the value of all the results hitherto obtained.

In the first place, though the small twine, furnished for the deepest soundings, would, much of it, bear a weight of seventy or even eighty pounds, yet, when he came to attach to it a thirty-two pound shot, to throw the shot overboard, and let it take the line from the reel as fast as it would, he found the line would part.

He then resorted to the expedient of doubling and even of trebling the line for the first two or three hundred fathoms. Thus, the parting was prevented. He found, moreover, that the operation was greatly facilitated by watching the trending of the line from the bows of the boat; and with one or two oars of a side, directing the men how to pull, in order to keep the line "up and down."

Accordingly, we find him, when he first put to sea, occupied for more than a month, availing himself of every opportunity for sounding during the interval, and making day after day unsuccessful attempts.

Finally, he succeeded in getting out seventeen hundred fathoms without parting. Bottom was reached at this depth.

Out of the first seventeen casts that were made, this was the only s ful one.

He was now in a fair way to get at the secret. The plan is to double or the line for the first three hundred fathoms; and, instead of letting t take it as fast as it will, and so bring up occasionally with a violent j

parting,—and this, as experience abundantly proves, is very liable to be the case, particularly at the first going off, when the shot is sinking rapidly,—Lee also adopted the expedient of keeping a gentle strain on the line at first, and this was accomplished by allowing a little friction to be applied to the reel, so that it would not for the first three hundred fathoms give the line to the shot quite as fast as the shot wanted to take it.

An important part of the plan, also, was that of keeping the boat by means of a couple or more of oars, perpendicularly over the shot. To be sure that he had reached bottom, he on several occasions repeated the trial, using in this case two instead of one thirty-two pound shot for a sinker. The result was the same agreement as to depth.

Success crowned his efforts so far, and he now began to have such confidence in his results,—for the mark of each successive hundred fathoms, as it went out, was carefully timed,—that, with his shot on the bottom at the depth of three or four miles, he would use it as an anchor, ride by it in his boat out there in mid ocean, while the force and set of the surface current, out upon blue water in the open sea, were accurately determined. This was the first time that such a thing had been done.

Thus, the egg was made to stand upon its end; and the plan of deep sea soundings finally adopted, and now in practice, is this:—Every vessel of the navy, when she is preparing for sea, is, if her commander, or, with his consent, any officer on board, will pledge himself to attend to the deep sea soundings, furnished with asufficient quantity of sounding twine, carefully marked at every length of one hundred fathoms,—six hundred feet,—and wound on reels of ten thousand fathoms each. It is the duty of the commander to avail himself of every favorable opportunity to try the depth of the ocean whenever he may find himself out upon "blue water." For this purpose he is to use a cannon-ball of thirty-two pounds as a plummet. Having one end of the line attached to it, the cannon-ball is to be thrown overboard from a boat, and suffered to take the twine from the reel as fast as it will; and the reel is made to turn easily.

When Lieut. Berryman took charge of the brig, and went to sea, of course he availed himself of Lee's experience, and commenced where Lee had left off.

But there was still one thing wanting: positive evidence that the plummet had reached the bottom: for, hitherto, the plan had not contemplated bringing up specimens of the bottom, inasmuch as the hauling up of the shot from such great depth was regarded as an impracticability.

In this stage of the matter Lieutenant J. M. Brooke, a clever young officer, who was at the time doing duty at the Observatory, proposed to me a contrivance by which he thought the shot might be detached as soon as it touched the bottom, and specimens brought up in its stead.

I was in the habit of consulting him; he often assisted me with his reflections; and I referred him to Mr. Greble, the instrument-maker of the Observatory, that they two might give his idea shape, and construct a model of the machine. The result was Brooke's Deep Sea Sounding Apparatus, as exhibited on plates 7 and 8. It is a simple and beautiful contrivance, which a mere inspection of the plates seems sufficient to explain.

HOW SIX REVENUE CUTTERS ARE TO BE SPOILED.

It is, doubtless, well known that the Revenue service is under the immediate control of the Treasury Department. It is also well known that the Hon. Secretary of the Treasury is not, nor indeed can he be, conversant with nautical construction for such service. It follows that he must depend upon others to direct the construction of Revenue vessels. We have not the space, nor yet the inclination, in this connection, to show the abominations that have been committed in this branch of the Government. We know that Secretary Guthrie has rid the Department of the pernicious counsel that brooded over the mechanical branch of that service in former administrations; but whether, on the other hand, he has not fallen into an error of equal magnitude by selecting his counsel from the fogyistic ranks, we shall now proceed to inquire. The accompanying specification for six vessels of 50 tons each, gives the details of construction, in kind, size, and quality of the material of which they are to be built, even to the masts and spars, the number, lengths, and diameter, while the principal dimensions of the hull are not given. *This is a new dodge, and the most ingenious mode of shirking responsibility that we have yet seen.* Who will be blamed if these vessels do not perform as required, and as the Department expects? We say that the man who made out the specifications, and him alone. If the builder who gets the contract is competent to model the vessel, who will say that he is not competent to determine the length of her masts? If the Department has confidence in the person who made out the specifications, why not let him make model and spar draft, and furnish the builder with shape and power to propel it? The difficulty lies here. We more than suspect that the individual dare not take the responsibility—*he has not a sufficient amount of confidence in his rules of thumb* to justify this assumption; hence this dodge to throw it on the builder; the builder, in turn, can, and will, throw it off, because of the absurdity of expecting him to fit the vessel to the spars, instead of the spars to the vessel. *This modus operandi is decidedly worse in effect* than making a lock for an iron safe first, and then making the safe to fit it; or of making the main entrance of a house, and building the house to fit it. A child would laugh at the idea of making the cooking utensils of a stove first, and then making the stove to fit them; and this is even a greater blunder. It may be said that the stations of the masts are not given, but the tonnage is, which, indeed, makes the matter worse. We hope the Hon. Secretary will rid himself of this counsel before the mischief is done. Let every man be held responsible for what he does; a want of responsibility has been the bane of the Revenue service. We give publicity to th fication, which is a crude document throughout, that our reade judge of their merits, and that posterity may see how fogyistic their tors were.

SPECIFICATIONS FOR BUILDING A REVENUE CUTTER OF FIFTY TONS.

Length, custom-house measurement, ... *feet.*
Breadth, ... *feet.*
Depth of hold, from top of limber strake to top of beam, . *feet.*

Keel, of white oak, in one length, to side 8 inches, and in depth below the base line or lower edge of rabbet 10 inches; the floors will jog over $1\frac{1}{2}$ inches, making the whole depth of keel $11\frac{1}{2}$ inches.

False keel, of white oak, 2 inches thick, to be put on in lengths of 10 feet, after the deadwood and floor bolts are driven and riveted; to be fastened with 5-inch composition spikes, 14 spikes in each piece or length.

Stem, of white oak, in one piece, to side 8 inches; the front of the stem to be not less than 7 inches clear of the fore side of the rabbet, the aft side to be at the bearding line; scarph not less than 3 feet, to be hooked 1 inch, and fastened with 2 copper bolts $\frac{10}{16}$ of an inch in diameter and two 6-inch composition spikes in the nib exclusive of the other fastenings; to have one dovetail plate on each side fastened with 4 copper bolts $\frac{1}{2}$ inch in diameter and riveted.

Apron, of locust, side 8 inches, mould at head $7\frac{1}{2}$ inches, and at heel to come fair with the inside of the timber; fastened with $\frac{5}{8}$ copper bolts as high as the line of coppering and with iron bolts above that height, all 15 inches asunder.

Stern Post, of white oak, side 8 inches, moulded at heel clear of rabbet 12 inches, at head 7 inches; the heel to have two tenons, and one dovetail plate on each side bolted with 6 bolts $\frac{1}{2}$ inch in diameter and riveted.

Deadwood, of white oak, side 8 inches; the stern post knee of white oak will be jogged on the keel and to the fore side of the main post before the deadwood is put on; this knee will be bolted with 2 copper bolts through the stern post and two copper bolts through the keel of $\frac{11}{16}$ of an inch in diameter; over this knee the after deadwood will be built; and when the keelson is in, the whole will be fastened with copper bolts $\frac{13}{16}$ of an inch in diameter, to be 14 inches asunder.

Forward Deadwood, of white oak, sides 8 inches, and mould to suit the inside of timber; will be bolted with one copper bolt in the stem and two in the keel in diameter $\frac{11}{16}$ of an inch, and when the keelson is in the whole to be bolted with $\frac{3}{4}$-inch copper bolts, 14 inches asunder, and all the bolts to be riveted.

Main Transom, of locust, side and mould 8 inches, bolted to the stern post with two copper bolts in diameter $\frac{11}{16}$ of an inch; the remaining transom of white oak, side 6 inches, and fastened with one $\frac{3}{4}$-inch copper bolt, all riveted on the aft side of post.

Knight Heads, of locust, side 8 inches and mould to come fair with the inside of the frame, bolted to the apron with $\frac{5}{8}$-inch iron bolts, about 16 inches asunder.

Frame.—Timber and room 20 inches; the floor timbers and lower futtocks of white oak, side 6 inches, the top timbers and stanchions of locust and side 5 inches; the moulding size in the throat $7\frac{1}{4}$ inches, at the side of keel amidships 9 inches, at floor head $6\frac{1}{2}$ inches, at plank sheer $4\frac{1}{4}$ inches, and at rail $3\frac{1}{4}$ inches; the timbers of the frame to be placed close together, and in each scarph there will be 2 iron bolts of $\frac{5}{8}$ of an inch in diameter.

Breast Hooks, of white oak, sided $6\frac{1}{2}$ inches, in length 5 feet on each arm

from the middle line; all the bolts will be $\frac{11}{16}$ inch diameter, the throat bolt riveted on the outside; the remaining bolts one in each timber of each frame driven from the outside of the plank, and riveted on the inside of the hooks; these bolts to be of copper or iron, as they are above or below the line of copper fastening; the hooks will fay on the timbers; there will be one over the bowsprit, and one under the deck, and one below the deck hook forward, and one knee to each end of the main transom, with like fastenings.

Keelson, of white oak, sided 8 inches, and 10 inches deep.

Floors will be bolted with one copper bolt of $\frac{11}{16}$ inch in diameter through each alternate floor and keel, and the residue of the floors will have one bolt of the same size through the keelson, the whole riveted on the underside of the keel.

Wales, of tough white oak, three strakes on each side, $5\frac{1}{2}$ inches wide and $2\frac{3}{4}$ inches thick, thence diminishing gradually to the thickness of the bottom plank; to be fastened with two $6\frac{1}{2}$-inch iron spikes and two through-bolts of $\frac{1}{2}$ inch in diameter in each strake and each frame, except where the knee bolts will take their places.

Bottom Plank, of tough white oak, 2 inches thick, and above the line of copper not to show wider than $6\frac{1}{2}$ inches; to be fastened with two $5\frac{1}{2}$-inch composition spikes and two 1-inch treenails in each strake and each frame; where the width of the plank is reduced to 4 inches, half of the above square fastening may be omitted, and the remainder placed on the alternate edges. Butt bolts of $\frac{1}{2}$ inch copper, riveted inside on rings.

Clamps, of white oak or yellow pine, 2 strakes on each side $2\frac{3}{4}$ inches thick and 10 inches wide, the scarphs to be 5 feet long and hook one inch, having two $\frac{1}{2}$-inch iron bolts in each scarph; they will be fastened to the timber with two $6\frac{1}{2}$-inch iron spikes in each strake and each frame, and in like manner in each strake and each frame two bolts of $\frac{1}{2}$ inch in diameter driven from the outside and riveted on the inside, except where the knee bolts will take their places.

Bilge Strakes, three on each side, $3\frac{1}{4}$ inches thick and $6\frac{1}{2}$ inches wide, fastened with two 7-inch iron spikes in each strake and each frame, and in like manner two iron bolts of $\frac{11}{16}$ inch in diameter; to be driven from the outside before the plank is on, and to be riveted on the inside.

Ceiling, of white oak, $1\frac{3}{4}$ inches thick, fastened with two $4\frac{1}{2}$-inch iron spikes in each strake and each frame.

Upper Deck Beams, of fine grain yellow pine, clear of sap and knots, to side $7\frac{1}{2}$ inches and mould in the centre 7 inches, and $5\frac{1}{2}$ inches at the ends, and let down in the clamps $\frac{1}{2}$ inch. To be asunder in the clear to average not more than 3 feet 8 inches.

Knees, of white oak, to have one lodge and one dagger to each end of every beam of the main deck, to side 5 inches, arms not less than 3 feet 6 inches long, fastened with $\frac{3}{4}$-inch bolts, one in every timber, but not less than 4 in the body and 4 in the arm of each knee; driven from the outside of plank, and all riveted on rings on the inside.

Carlings, of yellow pine, to side $4\frac{1}{2}$ and mould $4\frac{1}{2}$ inches.

Ledges, of yellow pine, to side 4 inches and mould $3\frac{1}{2}$ inches, by the mould; there will be one ledge between every two beams, except i hatch, where there will be two.

Water Ways, of white pine, to side 6 inches and mould 9 inches, c on deck edge $1\frac{1}{4}$ inch; there will be one bolt $\frac{9}{16}$ inch of iron throug

beam into the clamp 6 inches, and one $\frac{9}{16}$ inch iron bolt between every two beams through the knees into the clamp 6 inches, also one iron bolt of $\frac{9}{16}$ inch in each frame; the through bolts of the upper strake of wales will rivet on the deck edge of the water ways.

Coamings, of mahogany, sided $4\frac{1}{2}$ inches, and show on the top $3\frac{1}{2}$ inches, with brass plates on top; fastened with $\frac{9}{16}$-inch iron bolts.

Trunk Cabin.—The sides and ends to be of seasoned white pine, 4 inches thick on the lower edge and diminished to 3 inches on the upper edge; the ends will be dove-tailed together and bolted to the fore and aft pieces with $\frac{3}{4}$-inch iron bolts 20 inches asunder; top of seasoned white pine 2 inches thick and 4 inches wide; the beams to be of the same material, to side $5\frac{1}{2}$ inches and mould $4\frac{1}{2}$ inches, with a spring of $3\frac{1}{2}$ inches; the side of the trunk above the main deck will have sash and glass, to be hung on the inside, also with shutters hung on the outside with brass hinges, to turn down, and when up to secure with a brass button.

Fore and Aft Pieces, of yellow pine, $4\frac{1}{2}$ inches deep, to fill in solid to the side, and be bolted through each timber with $\frac{9}{16}$-inch iron bolts, driven from the outside plank and riveted on the inside; the ends to be kneed to the beams.

Cabin Deck, of seasoned yellow pine, $1\frac{1}{4}$ inch thick, ploughed and tongued and properly nailed; the beams of white pine to side 5 inches and moulded 4 inches.

Cabin to have one length of berths on each side, with drawers below it; the berth will be under the main deck, and the drawers will project beyond the berth sufficient to make a seat; there will be two patent water-closets completely fitted, one on each quarter, with a house over them.

Ward Room to have a sufficient number of berths on each side, fitted as the cabin; at the forward bulk-head there will be a locker; all to be of seasoned panel white pine, to be grained or painted white, as may be directed.

Magazine will be lined throughout with two thicknesses of boards, and all covered with 16-oz. copper, and all nails, fastenings, &c., used about it must be of copper.

Berth Deck will be laid in hatches of $1\frac{3}{4}$-inch white ash plank. The galley deck will be covered with zinc.

Upper Deck will be laid of seasoned white pine, $2\frac{1}{2}$ inches thick and 5 inches wide, clear of knots and shakes, and fastened with two iron spikes of $5\frac{1}{2}$ inches in length in each strake and each beam, and one $4\frac{1}{2}$-inch spike in each strake and each ledge; all plugged.

Plank Sheer, of white oak, 3 inches thick, and fastened to the water ways, wales, and timbers with $\frac{1}{2}$-inch iron bolts $7\frac{1}{2}$ inches long; there will be one through each stanchion and riveted on the inside.

Rail, of white oak, or yellow pine, in thickness 3 inches and 12 inches wide; the scarphs 4 feet long, fastened with 3 iron bolts $\frac{1}{2}$ inch in diameter and one spike in each nib, secured with one $\frac{1}{2}$ inch bolt and one stay nail in each stanchion, and every stanchion let into the rail $\frac{3}{4}$ of an inch.

Partners of Masts, of white oak, in breadth 7 inches, in thickness 5 inches; kneed with lodge and lap knees, sided 4 inches and fastened with $\frac{9}{16}$ inch iron bolts; arm in length 3 feet, bodies to fill the space between the beams framed to admit wedges of 2 inches.

Cable Bitts, of locust, 8 inches square and 3 feet 6 inches above deck, to extend to the keelson and taper from the lower side of beam to 5 inches at

heel, with a cavil across 7 by 8 inches, and rounded on the aft side; fastened with two $\frac{9}{16}$-inch bolts in the beam and one at the heel; the cavil and bitts above the deck to have iron plates let in.

Fastenings.—The copper fastening to be carried one foot above the load line; the whole to be well caulked, paid and scraped inside and out; the bottom to be well caulked with new material, paid, scraped, planed, and paid with turpentine and tallow; and to be coppered with pure copper, not less than half to be 22 ounces, and the remainder 20 ounces to the foot; to be fastened with 1-inch sheathing nails made of copper and tin, $\frac{3}{4}$ of a pound to the sheet, and to be punched on the bottom.

Rudder.—Diameter of head 9 inches, with two composition braces and pintles, $2\frac{1}{4}$ inches in diameter, and the necessary saucer; head to have one hoop below and one above the tiller hole, $2\frac{1}{2}$ inches wide and $\frac{5}{16}$ of an inch thick; to be fitted with a proper tiller and steering wheel.

Paint.—All the work from the copper to the top of rail outside and in to be planed smooth, and have three coats of paints in such color as may be directed.

Boat Davits.—To one pair of iron davits fitted on each quarter in all respects complete and to suit the length of the boats; suitable windlass to be fitted. There will be two composition pumps of chambers not less than 5 inches, with two complete sets of gear and extra boxes to each. To have as many patent deck lights on the decks as are necessary for light. Gratings to all the hatches and the necessary ladders. The ports for guns suitably fitted.

DIMENSIONS OF SPARS:

	LENGTH.	DIAMETER.	HEAD.	NECK.	TRESSEL TREE.	ENDS.
Mainmast............	56 feet.	$13\frac{1}{2}$ ins.	5 ft. 6 ins.	$9\frac{1}{2}$ ins.	8 ins.	$6\frac{1}{2}$ ins.
Fore.................	54 "	14 "	5 " 6 "	10 "	$8\frac{1}{4}$ "	$6\frac{1}{2}$ "
Fore and main topmast.	22 "	$4\frac{1}{2}$ "	3–off.	$3\frac{1}{2}$ "	3 "	2 "
Main boom, 10 feet over the taffrail, one inch to $5\frac{1}{2}$ feet diameter.						
Fore and main gaffs, 2 feet less than fore boom, 1 inch to						4 feet.
Bowsprit out..........	14 feet.	$12\frac{1}{2}$ ins.	– –	– –	– –	8 ins.
Flying jibboom........	12 "	$4\frac{1}{2}$ "	3–off –	$4\frac{1}{2}$ ins.	$3\frac{1}{2}$ ins.	2 "

The spars to be in every respect completely fitted and placed; the lower masts and bowsprit will be of white pine and the other spars of spruce, free from sap, knots, and other imperfections. The rigging will be of the best Russia or water-rotted hemp, the foremast having 3 shrouds and the mainmast 2 shrouds on each side, of 3 inches in circumference; the fore stays and jack-stays 4 inches in circumference. The blocks of greater dimensions than 7 inches will be plank blocks with friction rollers, and all of less size will have steel pins with composition bushes. To be furnished with a complete suit of sails of the best flax canvas as used in the navy. The foresail, mainsail, and jib, of No. 5, and the flying jib and gaff-topsail of No. 10. Also one set of awnings fore and aft, and tarpaulings for all the hatches, and other usual and necessary canvas work. To furnish and provide the material and labor of every description necessary, that the vessel may be finished in a faithful and workmanlike manner, as a first class revenue vessel, ready for service, fully rigged and equipped and finishe cleat, excepting only the chain cables, anchors, boats, galley, c ward-room furniture, nautical instruments, and armament. To l respects made satisfactory to such person or persons as the Departm direct to superintend or inspect the vessel.

NAVAL POLICY—THE ADAPTATION OF STEAM TO THE PURPOSES OF WAR AND NAVAL GUNNERY.

WE publish the following paper from the *New-York Herald of July 6th*, at the request of several naval friends, and for want of space we shall only append the most prominent errors it contains in this unmber.—[*Eds.*

Newspaper columns have of late years been filled with articles urging the introduction of steam on a more extensive scale into our Navy, and many writers who have influenced to a considerable extent public opinion throughout the country, have written with an extremely limited knowledge of the subject upon which they pretended to treat.

Much has been said in depreciation of the "tubs" which the government have afloat, to represent an armed marine; and still more in fulsome praise of the clipper ships and packet steamers, which owe their existence to private enterprise. The question of the superiority of clipper over other merchant ships, either in respect to the safety of their passengers, or in an economical point of view, is foreign to the subject which we have undertaken to discuss; but we must express the opinion that neither in their models or construction are they adapted to bear the weight of a battery or to endure a cannonade, which in many cases determines the result of a naval action.

In estimating the adaptability of clipper or other merchant ships for the purposes of war, the fact is seldom considered that the cargo of a vessel of burden remains nearly the same in amount during a passage from port to port, while the contents of the hold of a vessel of war are continually and rapidly diminishing; her battery, which is above the centre of gravity and motion, remaining meanwhile a constant quantity.

Neither is the superiority of sailing in clipper ships over men-of-war so marked as has been generally represented. It is true that many of them have made remarkable passages, but generally at a sacrifice of capital and great risk of life. The mania for quick passages has obliged clipper captains to press their vessels, and the owners and underwriters are not unacquainted with the sacrifices which are made to secure a temporary *eclat.*

In several instances clipper ships have been beaten by our ordinary sailing vessels of war; but as officers seldom publish such advantages, and merchant captains do not chronicle their defeats, the public at large remain under the erroneous impression that no ship of any pretensions is so slow as a vessel of war.

The experiment of removing the battery of a vessel of war was tried during the famine of 1847, when the Jamestown was sent to Ireland with the donations of a liberal public, and the skilful merchant captain, who had been selected to command her, returned with the impression that she was the fastest vessel at that time in the world. With her armament on board she is a good sailer, and a most efficient man-of-war; but it is certain that transferring the weight of her battery to her hold would improve her speed, or that of any other vessel.

This difference would be the more observable when the consumption of provisions and water during a long cruise has destroyed the equilibrium between the weight on deck and that in the hold.

Next in order, we will treat briefly on the mercantile steam marine as adapted to the purposes of war, a subject upon which much eloquence has been expended in Congress, and much ink in editorials and communications for the newspapers.

A few years ago, contracts were entered into by the government for the transportation of the mails between Panama and San Francisco, New-York and Liverpool, and between the former city and Chagres. Large sums were paid—in some cases a portion being advanced—ostensibly for payment of mail transportation, but in reality as a subsidy for the contractors.

In each of the cases alluded to, the government held the right to receive these vessels into the service in the event of war, while one line was obliged to receive as commanders officers in the navy, and another to receive four passed midshipmen in each vessel as watch officers. The object which the government had in view, in providing for the reception of their officers, was to give them facilities in obtaining a practical knowledge of steamers; but in the course of time, means were discovered to evade the provision, and the officers were withdrawn from all except two vessels. Some who had become accustomed to the service resigned their commissions, and the government, instead of obtaining for the Navy men familiar with steamers, lost some of the most promising young officers, who could not re-

sist the superior inducement of an independent command, with a salary sufficient to support their families in comfort, to the subordinate position and small pay of a lieutenant in the naval service. The steamers thus subsidized were not adapted for warlike purposes, and the system introduced was the most expensive which could have been devised, as it involved large payments for an indefinite term of years for the privilege of purchasing or hiring these steamers at an enormous price during war.

Should war occur between this country and any other, it would probably be with a more powerful naval nation; in which event our packet steamers would naturally lie idle at their wharves, unless employed by the government.

Not being "learned in the law," we will not discuss that constitutional provision that Congress shall grant no monopolies, which it certainly appears to have done by subsidizing certain lines, and thus preventing competition; but will merely call attention to the enormous sums which England has paid during the present war to the mail steamers which she has so liberally supported, when she had occasion to use them for the transport of troops. It will be observed that such vessels were used only as transports, and not as vessels of war, as has heretofore been so confidently predicted by the adherents of mail steamship lines. The fact, however, that England is so well provided with steamers of war prevents this argument from having its due weight as applied to other countries.

Notwithstanding all we hear and read of the strength and solidity of our steam packets, there is a marked difference in their construction and that of a steamer of war, as any one can assure himself by watching the building of each. One is only intended to bear her engine, coal and cargo, all buried in her hold, while the other, in addition to this weight, has her ponderous battery always elevated above the centre of gravity; always an important element—and especially so, as consumption of coal, provisions, and water, increases in a geometrical ratio its effect upon the ship.

The packet steamer is built with strength of timbers and planking sufficient to resist the action of the sea; while in addition the steamer, in common with other vessels of war, is expected to endure the weight of a cannonade, to have a power of resistance to the battering power of her enemy. This ability to bear battering is an important consideration, which has in many instances decided battles, but as will be seen hereafter, is less important in side wheel steamers, than in propellers and sailing vessels, owing to their inherent weakness.

The slight beams, carlines, and decks of the packet steamer are not adapted to bear the weight of heavy guns, and even when strengthened for that purpose, at a great expense of time and money, a defective steamer of war would be the result, as vessels modelled to carry all the weight below cannot be adapted to carry a large proportion on deck, unless some grave mistake was made in their construction.

Owing to the greater speed heretofore attained by side wheel steamers over propellers, they have been almost invariably employed as mail packets and for the transportation of passengers. The experience of maritime nations has proved conclusively that side wheel steamers are not adapted for the purposes of war; and even Great Britain and France, with fleets of these expensive vessels on hand, have commenced to modify their system and introduce propellers instead. As this article may find its way into the hands of those who will not understand or appreciate the motive of this expensive modification, we will attempt briefly to explain:—

The boiler, wheels, and much of the machinery of a side wheel steamer are exposed to the effects of shot, which would instantly disable them. In the case of a shot striking a boiler, the consequence would be disastrous, as an explosion of steam would be superadded to damage and disability. We are not at this moment prepared to state the amount of vital surface exposed to the effects of shot on board a side wheel steamer, but believe that it will average more than one-fourth her length. The masts and rudder of a sailing vessel are not in strictness vital points, as even at sea they can be substituted in case of emergency. The propeller enjoys nearly the same immunity, her funnel and false stern post being the only additional vital points, the boilers, machinery and screw being below the surface of the water. A side wheel steamer is not adapted for sailing, the paddles and arms being a constant drag in the water, and the attempt to unite the two means of propulsion has never been clearly successful. By attempting a combination of the two [illegible] powers, the advantages of each must be greatly diminished. The wheels of [illegible] must retard a vessel while under sail; and on the other hand masts and yards pr[illegible] to the size of a vessel must impede a steamer very much, especially whe[illegible] against a head wind.

In building up a Navy, policy would dictate that the probable character of wars and future antagonists should be duly considered.

To those even the least gifted with political sagacity, it must be apparent that any naval contest in which we may be engaged must be with either England or France, both of which nations have a vastly preponderating power on the sea, consisting of every necessary element. In case of a war with either of those nations, descents will doubtless be made on our coasts, and probably upon some of our seaports; but our permanent fortifications, backed by respectable field works, the utility of which was so fully developed during the siege of Sebastopol, will very soon teach them the necessity for caution.

Add to these inert defences, the immense movable masses of men which the iron horse—more potent and direful to invaders than the wooden horse proved to the defenders of Troy—can bring to any menaced point, and it will be seen that the war would soon assume an almost exclusively maritime character.

In such war we cannot but have the ultimate advantage. To France we are a necessary market, and to England a necessary producer. Losing the custom of the United States must paralyze many of the manufactures of France. England would also suffer by the closing of a great outlet to her manufactures, but she will suffer most for the want of the raw material upon which her manufacturing and commercial prosperity in such a high degree depends. We would doubtless suffer from the suppression of our commerce, but to a more limited extent we can produce all we absolutely require, and warlike operations consume almost all that is produced. Our citizens, moreover, have a peculiar facility for adapting themselves to circumstances, and capital now employed in foreign commerce would be speedily diverted to other, and not less profitable channels. A war at present would, like that of 1812–1815, act like a prohibitory tariff, under the shadow of which would spring up and mature many of the arts and manufactures which foreign competition now prevents us from essaying. Such would be in all probability the political economical effects of a war, while the actual contest would be for the most part on the ocean, and the object of the parties respectively to destroy the commerce of the other. Cruisers would meet like stout knight errants of old, and contend for supremacy, but the vital blows would be given through the capture or destruction of commercial vessels. The enormous injury which our Navy and private armed vessels inflicted upon Great Britain in the last war, suggests to us the means which we will possess in any future contest, and we will not be tardy in availing ourselves of them; and instead of laying our vessels up in harbor, as was proposed by cautious statesmen in 1812, we will send them forth boldly to compete with their equals, with the proud consciousness that, as in times past, they will render a good account of themselves, and that when they cannot be more chivalrously employed, they will be dealing deadly blows by attacks upon the commerce of the enemy.

With a naval force, which, for the first twelve or eighteen months, must remain vastly inferior to that of our gigantic adversaries, organizing our ships into fleets would be worse than madness, and the question arises as to the class of vessels best adapted to a predatory war, and to contests between single ships, which must invariably ensue. Two primary considerations are required—speed, that they may overtake or escape from an enemy at pleasure, and the ability to keep the sea for long periods. The first condition is so ostensibly desirable that it requires no argument to support or explain it; the second may not be so generally appreciated. England or France in the event of a war with this country would blockade all our naval ports, and make egress and ingress a matter of extreme difficulty. They would also station a naval force in the vicinity of important foreign commercial ports, which would prevent or render it difficult to obtain the necessary supplies. Of one fact we may be assured, that every coal depot in the world would be closed against us until we had constructed a sufficient number of ships to force their blockade. Our own ports blockaded, and foreign depots closed against us, what, then, would be the utility and condition of our sidewheel steamers, whether originally constructed for men-of-war, or mongrel attempts to transform our steam packets for that purpose? They are not adapted for sailing, and their coal would scarce carry them clear of a force blockading our own coasts. When their coal is once consumed, they would resemble a whale, gigantic in proportions, but without flukes, and an easy prey to any adversary, however contemp

That such would be the natural consequence, requires no proof to a man of ordina ception; and we certainly do not write for the utterly ignorant, or the caviller who r a demonstration for every proposition which, once stated, is self-evident. We therefore, sidewheel steamers for the purposes of war, and most unconditiona demn the system of subsidizing packet-steamers, when it is done on the that such vessels can be made available in war, except as despatch vessels ports for troops. The class of vessels which would be made most available especially in such a contest as we are most likely to be engaged in, are st mounting from forty to sixty guns on two decks, constructed and sparre

reference to sailing qualities, and with the screw disposed in such manner as to elevate it above the surface of the water, so that it may offer no impediment to the ship when under sail. The Merrimac, Wabash, Minnesota, Roanoke and Colorado, five of our new steam frigates, are of this class, and are among the most effective vessels in the world.

In such vessels the propeller is purely auxiliary, and only intended to be used in cases of emergency, or where it may be made eminently useful. They are masted and rigged as if intended exclusively for sailing, and neither their machinery nor their screws will interfere in the slightest degree with their sailing qualities. The consumption of coal is small, yet they steam respectably eight or nine knots, being the rate which we have every reason to expect, and which will be quite sufficient speed to answer all the conditions required of vessels of this class. In action they would enjoy all the advantages of steamers and sailing vessels, having the mobility of the first with the comparative invulnerability of the second. The funnel and false stern-post are the only vital points in addition to those of a sailing vessel, and they are so infinitely small in proportion to the hull of the vessel, that the chances of hitting them are exceedingly remote. These points, too, are only vital so far as mobility under steam is concerned, as their disability will not affect their qualities under sail. They have the scantling and endurance of one hundred gun ships, with a weight of metal equal to a ship of that class, and ample space on deck to develop its greatest effect. No frigate, however modern in her construction, could cope with them; while a line of battle ship, even of the first class, would scarce overmatch them, especially if heavy weather should deprive her of her lower deck battery, which would almost invariably occur, except in the mildest weather, and the smoothest sea. Everything is in their favor—weight of metal, ability to fire up at all times, endurance and ability of movement, whether under sail or steam. They possess, too, a paramount advantage in such a contest as that in which our country is most likely to be engaged, viz., the ability to keep the sea for long periods. Not depending, as a general rule, upon them as a means of propulsion, their consumption of coal would be small, while their immense capacity and limited crew would enable them to carry provisions and water for several months. Their spacious gun-decks give facilities for berthing their men in an airy and healthful situation, and would enable them, when sailing on a cruise, to carry two or three additional months' provisions on the berth deck, with trifling inconvenience. A vessel of this class has another advantage, upon which, however, we attach less importance, as it is contingent and might not be realized. If, after a long cruise, she should have expended her coal, she might throw herself on the track of transports and coal vessels bound to an enemy's depot, and supply her wants without the risk of encountering an overpowering protective or blockading force. It may perhaps be urged that sidewheel steamers would enjoy the same advantage. The argument, though specious, is fallacious. Coal is the life blood of a sidewheel steamer, without which she cannot exist as an efficient vessel. Want of coal destroys her ability to progress or to fight, and no prudent commander would risk the safety of his ship on the contingency of meeting at sea the means to secure propulsion and efficiency. Even in sight of, and close to a collier, a sidewheel steamer, without coal, could not overtake her, as, however slow those vessels may be as a class, they will outsail almost any sidewheel steamer. The propeller frigate, on the other hand, is, independently of steam, a magnificent sailing vessel; and though the coal which she might meet on the high seas would add much to her efficiency, it would not be essential, and we therefore consider ourselves justified in basing calculations upon the contingency. As may be inferred from the foregoing, our opinion is, that the most efficient vessels of war are frigate built propellers, such as those already enumerated, and that they are peculiarly adapted to the probable necessities of our country.

There is, however, one drawback to the founding of our hopes and plans upon the employment of these highly efficient vessels, an objection by no means inherent to them as a class, but to the peculiar constitution and organization of our government, and the various motives by which the many minds which assist in governing our country are swayed. The representatives of our people will not credit the probability of war until it is at our doors, and when too late to make effective preparation in advance. This is the experience of the world —history having taught even its most ardent votaries, that no republic—not even warlike Rome, while she retained her liberal institutions—was ever prepared for war when it burst upon her. The vitality of a republic at the same time is little less than miraculous. engaged in war, resources are developed which astound even the most sangu money necessarily diverted from commercial pursuits, is thrown into the lap of while men spring up at her call like the harvest of serpents' teeth when sown Phœnician Cadmus. Ordnance and munitions are already on hand or may be supplied—money and hordes of laborers will speedily throw up such works as

our forts impregnable; our extensive inland communications will afford us a speedy means of concentrating large armies at any menaced point, and convey the abundant supplies which we possess for our Commissariat. But heavy propellers, such as we have had the satisfaction of commending, cannot be constructed in less than several months; and meanwhile, should we possess no other means of defence and aggression, our commerce would suffer, and suffer unavenged, upon the ocean. To provide against such contingency, two means are open to us, both of which would doubtless be made available. Clipper and other merchant ships, though not adapted for men-of-war, would make efficient privateers, and would injure most seriously the commerce of any nation with which we might be at war. With a few heavy guns on their main decks, where they might be carried with safety and be made efficient, they would prove a terrible scourge to the enemy's commerce, could contend with similar vessels with a fair probability of success, and in most cases—if not overburdened by their battery—escape from cruisers which they might encounter. Still, the employment of privateers cannot be considered as calculated to elevate those who are engaged in them, or the standard of national morality. The interests of the owners must constantly remind even the most chivalrous, that duty consists not in contending manfully with equals, but in preying upon the weak, and that not so much with the patriotic object of weakening the enemy as for pecuniary gain.

The advent of peace, after a predatory war on the ocean, throws upon the community a large number of men who have fought only for gain or excitement, and without the incentive of patriotism, and who will return unwillingly, if at all, to peaceful pursuits. For these and cognate reasons, which will readily suggest themselves to those who devote thought to the subject, we conceive that, although a nation situated as our own should carefully and scrupulously retain the right to employ privateers—of which some European nations have attempted to deprive us by cunningly devised stipulations—it should only avail itself of that means of distressing an enemy when it becomes apparent that the government has employed all its own resources, and resorted to all less demoralizing measures to secure its ends. Propellers could not, with our greatest exertions, be constructed, and the machinery placed in them in much less than a year. Heavy sailing frigates could be built and despatched in much less time; but they are larger than would be essential in a naval guerilla warfare, and would be necessary in the second phase of a contest, when our force would have become sufficient to raise the blockade of our coasts and meet the enemy on equal terms. Such phase would probably occur in about eighteen months after the commencement of hostilities, as that would give us ample time to build our fleets in navy and other shipyards, and for the manufacturers throughout our country to supply machinery for such steam frigates as we have already alluded to. Meanwhile, our whole available naval force would be employed abroad, and from its activity, its ability to keep the sea, to contend with vessels of equal force, and to support itself at the expense of the enemy, we have a right to expect the most satisfactory results. The limited number of vessels now afloat would be the only drawback to this system for the annoyance of the enemy; and the question naturally arises as to what class of vessels should be built to augment our active force. They must have speed, endurance sufficient to encounter the battery of an equal, and, if the contingency of war require it, a superior force—must carry provisions for long periods, to enable them to avoid dangerous depots at home and abroad—must have comfortable accommodations for their crews, space for prisoners; and, lastly, they must be of such character that they can be built and despatched within a few weeks after hostilities have commenced, or become so imminent that Congress has determined to prepare in earnest for war. A few such vessels we already have in the navy, and policy dictates the necessity for increasing them during peace, and of building and despatching a large number of them on the first indication of war. These vessels are known in the navy as first class sloops, and are, perhaps, unequaled by any vessels of the same rate in the world. Their tonnage will average about 1,000 tons register, and their batteries consist of sixteen thirty-two pounders, of 42 cwt., and six eight inch guns of 63 cwt.—a truly formidable armament. Of the five ships of this class now in the navy, all sail well, have good capacity for stowage, ample room to work their heavy batteries with effect, and berth their crews comfortably. Each of them could carry six months' provisions, by judicious management of the space on board; and it is said that two of them—the Portsmouth and Jamestown—can carry nine months' provision hatches. In 1814, with the few facilities which we then possessed at that remot our frontier, a line of battle ship was constructed and ready for launching, at Harbor, in two months from the day when the wood-cutter commenced felling th her frame in the virgin forest. We should very much distrust the boasted pro country, if on our seaboard, with the immense force of mechanics and material

would place at the disposal of our government, we could not in fifty days have forty sail of new sloops on the ocean, manned with 8,000 seamen, formidable to their equals, and a scourge to the commerce of a maritime enemy. Those who remember the cruise of the little Essex when under the command of the chivalrous Porter, will appreciate the service which each of these vessels, judiciously commanded, might render to the country. The Essex, alone, and without depots or friendly ports, boldly entered the Pacific, lived upon the resources of the enemy, almost annihilated his commerce and whaling interest in those seas, and produced a panic which was felt throughout the British empire. Since that time the commerce of all nations has vastly increased in those seas, and, by comparison, the effect which would be produced by forty or fifty active cruisers may be approximately estimated. What we have already recommended indicates our opinions as to the most feasible and practicable war policy, so far as our navy is concerned; and we will now proceed to discuss the last subject on which we intend to treat in the present essay.

No subject connected with nautical affairs has been so much modified within the present century as naval gunnery. In the naval wars between Great Britain and France—monarchical, republican, and imperial—the English Commanders invariably aimed at bringing about a close action, in which the muscle of their seamen, their personal courage and endurance would supply their deficiency in skill. In the early part of the century the French had devoted more attention to gunnery than their enemies, who sneeringly accused them of a preference for the "game of long balls." In those days, in many fleet actions, when the noise and expenditure of powder was very great, the damage done to the combatants respectively was exceedingly small, a fact attributable to the distance preserved between the opposing lines and the defective gunnery of both parties. The war with the United States taught Great Britain a lesson which has been singularly beneficial to her Navy. In that contest she encountered men equal to her own in muscle, bull-dog courage and endurance; and who, in addition to a national aptitude, had been carefully trained to pointing and firing their guns. The advantages which we derived from our superior skill was obvious, and general attention was soon called to it by Colonel, now Lieut. General Sir Howard Douglass, in the first edition of his excellent work on Naval Gunnery, published in 1818. Notwithstanding the consciousness of deficiency which prevailed among intelligent English naval officers, the progress of improvement at first was very slow; and even so late as the battle of Navarino, the line-of-battle ship Asia—Sir Edward Codrington's flag ship—fired fifty tons of shot at a Turkish frigate without sinking her, and that, too, in smooth water, and so close that they could distinguish the white of the eyes of the Turkish defenders. We are not certain that this frigate was not Egyptian, one of Mehemet Ali's contingents. The French appear at no time to have suspended their efforts for the improvement of naval gunnery; and more than twenty years ago they had on board their ships the tangent or graduated sight now used in all navies. A few years later the English, at the recommendation of Sir Howard Douglass, fitted an old line-of-battle ship—the Excellent—and stationed her at Portsmouth, for the purpose of experimenting in gunnery, and giving a practical course of instruction to seamen, who were afterwards drafted to different vessels employed in active service. Many distinguished officers, among whom was Captain Basil Hall, were not too dignified to avail themselves of the course of instruction which this establishment afforded, and attended there for the purpose of graduating in gunnery. The ordnance officers of the larger ships are also graduates from the Excellent; and thus, in a few years, and at a trifling expense, Great Britain has provided herself with an efficient corps of ordnance officers, and a large number of practical gunners. Nearly coincident with these advances in the English and French service, the howitzer or Paixhan gun was introduced into both navies. At the same time, in our own service, which by its exploits had called attention to the necessity for skill in naval gunnery, the most singular and unaccountable apathy prevailed. Resistance was made for a long time to the introduction of Paixhan or shell guns, on the ground that we had none in the war of 1812–15, when we were almost invariably fortunate in our naval actions. A wooden batten with a groove was lashed on the gun as a sight, and with this rude and imperfect contrivance our older officers appeared perfectly content, and utterly unmindful of the improvements going on around them. It was perfectly obvious to all who used them, that such gun sights were only calculated to mislead, as, if they w correctly in the first instance—which was very unlikely to occur—they would i ly change when the wood warped, or when an unequal strain was brought u ings. Any one acquainted in the slightest degree with the sighting of arms the great difference which an almost imperceptible deflection would make a long range. A struggle for and against the introduction of improved cannon

and the introduction of appropriate sights, existed for some years between the younger and older officers; and although the author of this article saw Paixhans or howitzers used with wonderful effect against the castle of San Juan de Ulloa in 1838, he never saw a shell on board an American vessel of war until 1843, at which time they were considered a fearful and incomprehensible missile, not to be used or tampered with; and although he saw, at the same time, graduated sights in foreign navies, he never saw one on board a vessel in which he served until 1851.

"Honor to whom honor is due." In 1850 Commodore Warrington, then chief of the Bureau of Ordnance, discarding antique prejudices and predilections, natural at his advanced age, convened, with the approval of the Secretary of the Navy, a board of young officers, to whom he confided the task of reforming the artillery drill in the Navy, and compiling ordnance regulations. When the Board was about to convene, he said to at least one member, that he and his compeers were behind the times, and that he willingly confided this duty to younger men, who had been constantly in service, and kept pace with the improvements of other nations. We owe much to Commodore Warrington for this concession—a rare instance of liberality in an old man—and to the board of his selection, which was almost, without exception, composed of the best materials which the Navy presented.

The absurd and antiquated drill was abolished, and a good one substituted, while an ordnance manual was promulgated which has left us little to desire. Before the work was consummated Commodore Warrington died, but in his successor, Commodore Charles Morris, the Navy obtained a chief of ordnance able in the extreme, and zealous for the progress and improvement of this important department. From a career of usefulness Commodore Morris has recently been removed by death, but not until our ordnance had attained a perfection under his superintendence, which we candidly believe cannot be found in any other service.

It was not, however, with the object of boasting of our improvements and perfections that this essay was undertaken, but to point out still existing deficiencies, and with due modesty to suggest some essential modifications. It is well known, even to many persons unconnected with military and naval affairs, that the tendency of modern improvement in ordnance is to decrease the number of guns, and increase the weight and calibre. Shell guns or howitzers of eight, nine, ten, and eleven inches, have in many cases taken the place of thirty-two and forty-two pounders. (The eleven-inch gun is a recent introduction, and no ships have yet been armed with them. It is intended to mount twelve on board the Niagara.)

The battering power of such guns is unquestionable. Even when fired with uncharged shells or hollow shot, if they reach the object and penetrate, they are more destructive than a solid shot of the same calibre.

The familiar experiment of firing a rifle ball through a pane of glass will illustrate the superior destructive power of a lower velocity. Shells, whether filled or unfilled, have not the velocity and extreme range which a long thirty-two or forty-two pounder will give to a solid shot. This fact might be considered as measurably condemnatory of this species of ordnance, if it were not a fact well understood by experts, that naval gunnery is by no means a certain science; and the uncertainty of the aim over a certain distance is so great, as to cancel in a high degree the advantages of a greater range, especially when the short range has, in addition to the direct effect of the momentum of the shot, the terrible effects of its subsequent explosion. On this subject much misunderstanding has occurred, and much has been said in laudation of steamers with a few heavy shell guns, and their ability to take their distance and position with sailing vessels at a point of impunity; whereas it is well understood by those acquainted with steam armaments, that their howitzers have not the weight of metal to endure the charge which would give them a range equal to the thirty-two and forty-two pounders of frigates and line of battle ships. The first system introduced into steam armaments was the shell system—guns of long calibre, but without weight of metal to endure a proportionably heavy charge of powder, and, consequently, to secure a very high velocity and a long range. Into this system we fell, in common with other naval powers; but after a few years' experience, it became apparent that the range of such guns was too short, and that instead of a steam frigate having it in her power to assume a point of impunity, she herself, without being able to reach her enemy, would be within the range of his heavy thirty-two and forty-two pounders. The development of this fact somewhat shocked the advocates for an exclusively steam and shell marine, as it appeared that the large and expensive steamer, with her few heavy guns, would be over a certain distance, utterly helpless, and be at the mercy of a sailing frigate, with her long guns; whereas, if she attempted to approach, she would inevitably be

crushed by the greater number of guns which the sailing ship would bring to bear against her. These facts being well understood, induced a modification of the armament in the British Navy, where a steamer is generally provided with one or two guns of heavy calibre, intended to throw shells and solid shot at long ranges. This is, doubtless, a great improvement, and has very much increased the efficiency of steamers; but as naval gunnery is so uncertain at long ranges, it appears that the chance of hitting an object is in a direct ratio to the number of guns employed, supposing the skill of each combatant to be equal; and in that view what would be the chances of a steamer with two heavy guns of a long range, against a frigate with thirty long thirty-two pounders on her main deck battery? Should the steamer be side-wheel, of course her vital points place her under additional disadvantages. These facts do not in the slightest degree militate against the use of steam propellers, which can, and ought to be armed in such a manner as to give them, at the same time, the advantages of a steamer and sailing frigate. While upon this subject, and in connection with steam and gunnery, we will attempt to disabuse the minds of some who read this article, of the grave error that a steamer can choose her position, and assail a sailing vessel from a point of impunity. The mobility of a steamer in a calm, or in light weather, compared with a sailing ship, has given rise to this mistaken opinion, which has been elevated into a principle, upon which many erroneous theories have been based. That a steamer has, in respect to mobility, a great advantage over a sailing vessel, in all the varying circumstances of wind and weather, is an incontrovertible fact; but it by no means follows, that, owing to this quality, she enjoys the advantages in attack, which so many persons attribute to her.

The Bengal tiger is infinitely more agile and rapid in his movements than the rhinoceros, but in many cases the result of a contest is in favor of the latter. The strong and active tiger creeps around his adversary, careful to avoid his tremendous power, and aware of his invulnerability, but his slow and thick-skinned antagonist keeps towards him a steady front, and stands prepared to meet his assaults. The comparison of these animals will illustrate the offensive and defensive relations between a steamer armed with Paixhans and a few heavy guns for long ranges—the most favorable conditions for her—and a sailing frigate. The weight of the engine and coal of a steamer necessarily decreases her capacity for supporting a battery, and consequently the preponderance of force is in favor of the sailing ship of the same or much less tonnage. The object of the steamer, especially side-wheel, would be to choose her position at a distance, in order to avail herself of the long range of her heavy shot guns, and, if possible, to take a raking position, when but a few guns can be brought to bear upon her. Should the steamer only mount shell guns, at long distances, the superior range of the thirty-two pounder would give a sailing frigate a decided advantage. The ability to assume and retain such a position it has long been the custom to believe. When there is a good breeze no one doubts that the sailing ship can be so manœuvred as at all times to present her broadside to her more mobile enemy. The advantages which a steamer is supposed to have in action is in calm; yet few seafaring men, with the longest experience, have often seen it so calm, that, by proper management, a ship's head cannot be brought round and her broadside brought to bear.

Undue importance has also been attributed to the supposed ability of a steamer to place herself under the stern of a sailing vessel, without considering that the object presented being smaller, is much more difficult to hit, and that line of battle ships, frigates, and even sloops, can bring heavy guns to bear out of their stern ports. If all the circumstances of a naval combat be duly considered, the difficulty which a steamer would meet in attempting to select a position will become apparent. The sailing vessel, with her numerous guns, occupies the centre of a circle of which the extreme range of the steamer's longest guns—admitting that she has a marked superiority in this respect—is the radius. Estimating this at two and a half miles, we have, as the diameter of the circle upon which the steamer operates, the distance of five miles, and consequently a circumference of about fifteen miles. It is well understood that the steamer, if side-wheel, or propeller, armed with but few guns compared with her antagonist, must not fall within the effective range of her battery, her object being to select some point of impunity, if any can be found, and avail herself of her superior range and gunnery.

The steamer being on the beam and under the distant fire of her antagonist, may wish to change her position to the bow or stern, but to do so she will be obliged to steam about three and a half miles, or one-fourth the circumference of the circle; and while accomplishing that distance, even should it be a perfect calm, the sailing vessel can tow her head round twice, if necessary, with her quarter and stern boats.

A proper understanding of this subject will convince even the most ardent advocates of an exclusively steam marine of the utter absurdity of a steamer "playing around" a sailing

vessel and cutting her to pieces with impunity. Classes of ships, means of propulsion, and gunnery, are intimately connected; and it is not a little remarkable that while we devote so much attention to the discussion of the former, so little is given to the improvement of the means which we have at our disposal, by organizing a corps of practical gunners. Is it a matter of little importance whether our guns of a certain calibre have a greater range than our enemies, if our gunners have not the ability, from want of natural adaptation or practice, to give to them their greatest effect? Our present system could not well be more imperfect and unsatisfactory. When a ship is put into commission, her quota of seamen, ordinary seamen, landsmen and marines, is sent to her, but no provision is made for gunners, and it might occur that not a man of her crew had ever pointed or fired a gun. This would not probably occur in peaceable times, when we obtain many men who have served in other vessels of war, but might during war, when there would be a large influx of merchant seamen. It becomes the duty of the officers to train these men in gunnery, and it is a fortunate circumstance if a ship is ready in all respects for battle within three months after receiving her crew. This fact will be appreciated when the difficulty of hitting an object at sea is duly considered. The deck of a ship upon which the gun is placed, is in constant motion—not a regular motion, the estimation of which would be simple—but a complex motion, combining the roll and pitch. The object fired at is also in motion, and in heavy weather the intervening swell, which conceals it at times, enters into the combination to increase the difficulty. All persons who have used the rifle or musket are aware of the variation which a slight deflection makes at the distance of two hundred yards, and can realize what it would be extending the distance to one or two miles. We can only compare the practice of naval gunnery in a sea-way to shooting on the wing with a rifle from the back of a galloping horse. Without instruction and practice, therefore, however brave and skilful our seamen may be, they would be nearly useless in a modern naval action; and our ships for the first three months after being commissioned must remain in port, for the purpose of exercise, or run the risk of discrediting the country by engaging an enemy who has a corps of practised gunners. Owing to our immense tonnage and the facility with which men gain a livelihood on shore, we suffer inconvenience from a deficiency of seamen. At the same time that we introduced into our service a corps of gunners we might do much to supply this deficiency. To make a good gunner it is by no means necessary that a man should be a seaman; and no class of men would learn the use of a gun with more facility than those who had been accustomed to the use of the rifle.

If a corps of gunners were authorized by law, and a seagoing ship detailed for practice, we could soon enlist a good class of young men from the interior of the country, who, in a short time, would make skilful marksmen, and whose especial duties would be to point and fire the guns, but who, like our marines and the English marine artillerymen, would pull and haul with the seamen in working the ship. As an encouragement for men of good habits to enter this corps the pay ought to be respectable from the commencement of service, and increase at each successive enlistment. After having been sufficiently drilled in the gunnery ship in artillery and infantry drill and practice, as well as with the pistol and broadsword, they could be sent on board cruisers, where they would form a semi-military corps upon which the officers could depend in any emergency which might occur, and would, besides, soon become thorough seamen, to which they ought to be encouraged by holding out the inducement of increased pay. Such an organization would speedily do away with the necessity for employing "landsmen," who, for the first few months, are necessarily inefficient, understanding neither military duties or those required in the management of a ship.

We have already much transcended the limits we had assigned ourselves for this arti[illegible] and will not at present attempt to give a full development to this idea, which we deem vital importance to the navy.

In conclusion, we would only say that while we deprecate war, so long as pe[illegible] preserved with honor, we most earnestly hope that some efficient preparation m[illegible] before it bursts upon us. Owing to the peculiar circumstances of our politica[illegible] and geographical position, we are liable at any moment to come in collision[illegible] formidable naval power in the world; and, although bitter correspondence[illegible] and warlike speeches are made in Congress, no preparation is made to [illegible] gency which these orations may assist in bringing about. Thr[illegible] years we have been on the brink of a volcano, public confidenc[illegible] pended, and yet no effort appeared to be made by Congress to [illegible] true that there was no war, and that preparation for the ju[illegible] fluous, but those who are responsible for the evils of hostiliti[illegible] cannot claim that their political sagacity had anticipated such a[illegible]

REMARKS.—The writer is mistaken in reference to his "opinion of the models and construction of merchant vessels not being adapted to bear the weight of a battery, or to endure a cannonade, which, as he says, in many cases determines the result of a naval action." It would seem that he is unaware of the fact, that merchant ships undergo a much greater test, both in the strength of shape and manner of construction, than Naval vessels, being sometimes loaded when but half full, and again quite full when but half loaded; subjected to different kinds of service, and the most untoward distribution of cargo; often expecting to fill up with light goods above water, they are disappointed in being compelled to take in heavy freights to complete their cargo, and not unfrequently compelled to submit to a sea voyage with a ship out of trim, *not because of defects in the model*, (as has often been the case in war vessels,) but on account of being compelled to take such freight as offers, without having a list of the cargo to enable the stevedore to make distribution according to the weight, as is the case in the stowage of war vessels.

The writer forgot to mention another advantage the war vessel possesses, in being able to fill up the empty tanks with salt water, and of being able to pass down the shot out of the racks, and to house guns to equilibriate the forces, when the stability by carrying sail shall have been found to be impaired, which it should not be to any considerable extent, from the consumption of solid rations only, unless the vessel be the dullest afloat, or the voyage be of extraordinary length. The writer thinks that officers seldom publish their advantages over clipper ships. We are aware of the fact, and, for the best of reasons, there are few to publish. All the world knows that Naval officers are not backward in writing letters for publication, touching the superior advantages of the ship to which they are attached. As to the risk of life and property, and the sacrifices made in order to secure short passages in clipper ships, we should be glad to witness a just comparison between a war and merchant ship where the terms were equal. We have no doubts of the result.

The writer reminds the reader that, in 1847, the battery of the sloop-of-war Jamestown was removed, and the vessel was sent to Ireland with breadstuffs, and that the impression made by her performance was, that she was the fastest vessel in the world; but he forgot to add, that *she was modelled and built by a private builder*, though holding the commission of Naval Constructor, and that another vessel belonging to the Navy performed a similar service, but was unaccountably dull, although modelled by a Naval Constructor, duly inaugurated.

We would here remark, that the elementary principles of shape for navigable purposes adapt themselves to the service to be performed—whether the burden to be sustained be that of iron in the hold as cargo, or in iron on deck to be used as a battery for war purposes. In the case of the James-

town, the performance and service alluded to, only proves that the elementary principles of her model were better adapted to freighting than to war purposes, and that the vessel we have referred to, as being employed in a similar message of mercy, was adapted to neither the purposes of war nor peace. The geometrical focals of her form were concentrated for no definite service and to no special object; consequently, she was a failure.

In reference to the ability of a merchant ship to bear battering, we are at a loss to know what the writer means. Must we infer that cannon-balls only batter and bruise the vessels at which they are thrown? Is an action between two vessels to be compared to a pugilistic encounter? We had supposed that the shot passed quite through the side of a war vessel when within effective distance, though her frames were of *live oak*. Could it do more than this to a merchant ship, whose frame was of white oak? We had supposed that live oak frames were preferred in the Navy because of their increased durability, and not because of any inherent quality that timber possessed in resisting shot.

In reference to the strength of the beams and carlins of a merchant ship, we have only to say that, while the gun and spar deck of an ordinary sloop-of-war are one and the same, the spar deck of a merchant ship is the lightest, and the lower deck the heaviest, or more in conformity with the requirements of a gun deck. As to steamers, were they designed for armament, they would be relieved of at least one deck, and in some cases two, as the writer should know, if he does not.

In the main, he is right in reference to the kind of steam propulsion: the screw is best, but the manner of applying it, as exhibited in the five new steamers he names, is defective; and, we may add, that if these are the best war steamers, or among the best in the world, it is quite time there was some improvement. As to the vessels' battery, the most effective is that which is mounted upon small vessels; small targets and great guns are the most formidable to the enemy, and the least liable to damage from the enemy's shot and shell.

ADMONITION.

Captains attend! 'tis surely your concern
To rule and govern well from stem to stern;
Be sure to keep a sharp look-out a-head—
Mark well your track—closely attend your lead.

A thorough zeal with vigilance impel,
And aid brave tars in ev'ry branch t'excel;
So prove GOD'S providence your sole appeal,
And ever guard your way for National weal.

RESPONSIBILITY IN THE NAVY.

When the Navy was under the exclusive control of, and really seemed to, belong to the old Navy Commissioners—when it was constructed, officered, manned, supplied, fitted out and disposed at home and abroad, according to their will and pleasure—they were held responsible for its creation and management, and it was said to be efficient. Yet it was despotic—unlike any other institution of our country—and it was entirely in the hands of a very few. Even a midshipman could not be warranted without their consent, and the list was filled with the sons of Virginia gentlemen, until it became a common question "whether Virginia belonged to the Navy or the Navy to Virginia." When the people themselves took possession of it as one of the co-ordinate branches of the Executive government, organizing the Department by bureaux of ordnance, construction, supplies, &c., and making laws that midshipmen should be taken from each and every congressional district of the country, those old gentlemen predicted that it was on the high-road to ruin.

Power is so ever true to itself, and poor human nature has so many weaknesses, that although the same old veteran tars were placed at the head of the several bureaux, it is yet believed that they were not unwilling the new system should fail to answer the hope and expectation of its friends, and that a return to their darling old system would be the consequence. It was not to be expected, therefore, that much pains would be taken by them to oil the bands and tighten the screws of the new machinery entrusted to their care, or that corresponding laws and regulations, so indispensable to its success, would be recommended by them. Time had sanctified the ancient articles of 1800, to which had been added and super-added the chamelion "usages of the sea-service." Absolute discretion, untramelled by law, was claimed for commanding authority at sea; nor was Jack perfectly sure that his captain, for whom no law was made, had not a clear right to "boil him in the ship's coppers." The word "progress" was not in the naval lexicon. Every suggested reform was a contemplated innovation. It was the most audacious presumption to drop a hint that those brave old tars did not know so much about naval matters as they might have known, and it was high treason to discipline for a junior officer to claim the right of preferring charges against his senior. Every avenue to progress and reform, as well as to law and justice, was closely shut. The Navy was efficient—but it was the efficiency of absolute despotism. The change was radical—and the old Commissioners were the very last officers in the service to whom the management of the new system should have been confided. That irresponsibility, which inevitably grew out of the loose management of a system they disliked, was the consequence, and it has required years to accomplish that which might have been done in so many weeks.

We pardon those brave old men who had so gallantly won our naval victories with the "Navy as it was," for that professional pride of which these little delinquencies were the offspring. Theirs was, comparatively, a dark age. It was not their fault at that early day, that they did not see clearly the rapid pace of discovery, invention and improvement—for no scholar or statesman of that time had the forecast to tell the wonders of the future. Even public opinion would have consigned to the mad-house the enthusiast, who should have seriously prophesied the consummation of steam war-frigates and magnetic telegraphs across the Atlantic Ocean.

But those who now fill their places at the head of the Naval Bureaux in the Department should be allowed no apology for blindness. Broad daylight is constantly dazzling upon our brilliant inventions and improvements in naval architecture, ordnance, outfits, nautical science generally, and, indeed, every branch of man-of-war appointments. These new ideas should be encouraged by government countenance and patronage. If not for the cause of science and progress, at least for the benefit of our country, we have a right to claim that some of them may be adopted in the Navy, especially since almost every other first-rate nation of the earth has tested their incomparable utility in the emergency of war.

For neglecting this we must hold the Department responsible. Administratively we have uniformly borne witness to its able and enlightened management; but we must be permitted to tell Mr. Dobbin that from no one of the influences by which he has been surrounded, has his fame suffered so much as from the influence of those fossil remains of antique notions and obsolete naval ideas which still continue to give tone to the several bureaux. We owe him much for his wisdom, firmness, and decision of character. We shall owe him more, if, before he retires from the Department, he shall succeed in convincing those whom he may leave, to *instruct* his successor that it is no part of the Navy's best policy to continue any longer in the belief which is supposed to be the belief of the terrapin, that the world does not extend beyond the limits of its own shell.

For ourselves, we have been more interested in the Bureaux of Construction than in any other, since we have witnessed the entire absence of responsibility there; and we shall continue to notice its delinquencies until there is a manifest improvement. It is said that vessels of war have been fitted out at our naval stations for distant cruises, and upon a scale involving the greatest possible expenditure of public money at the *locality* of their outfit; and then at the very first port touched by those vessels outward bound, we have heard of heavy bills against the government, on account of *necessary repairs.* If proofs are wanted, no doubt they may be found on the files of the Treasury and Navy Departments. We have heard these things often—but, sad to say, from some of the vessels thus fitted out, we have not heard at all. Like the Albany, the Porpoise (and the Perry narrowly *escaped) they have gone*

"To that bourne whence no traveller returns."

Who is responsible? If a commanding officer runs a ship ashore, even in a gale, he is often tried by court-martial. If he is compelled, for the ship's safety, to throw his battery overboard, the same fate awaits him. If he carries away spars or rigging on a foreign station, the commodore not unfrequently thinks it worth while to call a court of inquiry. But who is responsible for defective outfits? Has any one ever heard of the trial of a naval station on that account? Has any one ever heard of the trial of a commandant or a naval constructor? Never. Nobody is *held* responsible. The offence goes unpunished, and hence it is constantly occurring again and again. Yet when we complain of this, and invite public attention to the entire absence of responsibility in this branch of the service, we are told by those who are too sensitive under the exposure, that we are captious overmuch, and directly "opposed to *the Navy*." More's the pity then that "the Navy" is opposed to us in this plain matter of fact.

Again we hear—and we hear it from naval sources—that defective outfits are quite as common, and even more frequent, in the vessels of our commercial marine; and the reason why no newspaper notice is taken of *them* is that they are private and not public vessels. According to our experience and observation it is not so. Merchant vessels are generally fitted out under the immediate eye and supervision of their owners or their ever-responsible agents, and the work is done by mechanics who depend upon their faithful labors for their daily bread. Merchants and mechanics therefore, are both too deeply interested to be careless—and are thus responsible with the best of good and sufficient sureties. There is no lack of responsibility here—as even the three-years cruises for whalers from Nantucket and New Bedford will bear witness.

As we have repeatedly said, the Navy suffers as much from the absence of law, and from the non-enforcement of law in its government afloat, as at the dock-yards on shore. Somebody has remarked—a foreigner probably—that "law is the absolute monarch of America." Such, indeed, is our true theory. So it should be. Laws are made by the people, or by their representatives chosen for the purpose, to govern all our institutions, and as a matter of course all good government reposes in or emanates from their strict observance. The extent to which laws are observed, is the exact measure of efficiency of the institution they are enacted to govern. Especially is it so in the Navy. Written law, made by competent authority—not the edict or ukase of one man—whimsical and capricious perhaps, and may be puffed up with inordinate self-sufficiency, or exceedingly top-heavy with the absorbing idea that

"He treads the monarch of a peopled deck"—

but the laws and written regulations of Congress and the Navy Department.

These are the authority to which, by the genius of our government, each and every officer and seaman is amenable and responsible, and should ever and always be held strictly accountable.

There is a species of favoritism in the service, both afloat and ashore, which is utterly subversive of justice and discipline. Whether the commodore prefer charges against his midshipman or his midshipman against him, the case should be tried. Neglect in this respect is an offence against the law itself by the superior authority which makes it—a fatal example, too easily followed on foreign stations when the prerogative of granting a court belongs to and is liable to abuse by commanders of squadrons.

If, when clear and plainly defined charges are preferred either upward or downward against those in authority, the Department is deterred from ordering a court by considerations of a personal or political character, how can good government in the service be expected? Repetition of the offences follows as a matter of course under the plea of "the fatal precedent," and nobody is held responsible, for Commodore Happy-go-lucky has voted that courts martial are a perfect nuisance, since he cannot share his cabin for a court-room. We have the audacity to differ from him both as to the character of courts and his own right to quarters. A court-martial is the dearest privilege of the innocent, and the shield and protection of the character of the upright, who always seek its guardianship under the slightest suspicion of impropriety. It is dreaded and avoided only by those who would shun its just punishments. Whenever the Department neglects or refuses to hold offenders to this measure of responsibility, it proclaims from the highest of high places a virtual immunity for all similar offences, and becomes the corrupt fountain of a corrupted and corrupting stream. These are undebateable truisms, and yet by many of our veteran tars they are considered "the new-fangled notions of sea-lawyers."

There are annoyances enough on board ships of our Navy which cannot be reached by courts-martial, to give to the deck-government the quality ‹
interesting variety. There is not unfrequently the utmost stringe
governing non-essentials, while essentials suffer from laxity
We have known commanding officers, whose delightful pastim
the officer of the deck every hour in the day, to tyrannic
right to afford officers and men shore privileges on forei
about decks, pitching into the cooks about the spittc
helmsman about the tweddling line, while their bold batt
fore and aft were in a shocking condition, and their crew
ercised at general or special quarters for months. W
commanded unhappy as well as inefficient ships? A
if not before, such commanders should be tried by
not believe there are now many such in our gallant
improved and are improving.

We have more than once adverted to this matter of ship-government, because we incline to regard it a matter of first and last importance. Nor should we forget to reiterate our conviction that nothing which appertains to it is more necessary than a uniform code of printed rules and regulations for the internal government of each and every class of national vessels. At present "Jack" may, in the course of a single cruise, be transferred from and to half-a-dozen different vessels, and on board of each he is sure to find a different captain's code, for the violation of which, punishment is prescribed. Our desire has been—and still is—to press upon those who preside over the Navy Department, the indispensable necessity of common laws for our common naval service; clear, plain, simple, general, and uniform laws, emanating from the highest authority, and constantly exposed in printed forms all over the decks. This is the best method to prevent offences—it is the "ounce of prevention" which is worth "a pound of cure;" and infinitely better than a resuscitation of "the cats," whose untimely death was so much lamented and deplored by a long list of naval worthies who had become accustomed to their use as a part of the profession.

In thus closely criticising the interior of our Navy, we know that we are exposed to the censure of those officers who habitually denounce everything and everybody not exactly to their own liking. But we must be permitted to tell them, that the Navy is no more theirs than ours—that, indeed it is *ours*, for "we the people," built it, keep it afloat, pay its expenses, and make laws to govern it. And, most assuredly we should have the privilege of discussing it with freedom, dealing fairly with its merits, as well as its demerits, and suggesting improvements and reforms.

That was a wise monarch of the olden time who kept near his person constantly a spy upon his own acts, with instructions to rebuke him for every fault discovered. We are proud of our gallant little Navy, and we are proud of its officers and its gallant tars. But whenever and wherever were so many persons enrolled for service, without so much as "a few black sheep in the flock?" And we hold therefore that they should not be so thin-skinned in matters professional as to declare us opposed to the Navy, whenever we point out what we consider to be its faults. For they may rest assured that we do this solely for the purpose of scattering by the wayside a few seeds in their season, with the hope that they may spring up under the genial influences of the spirit of the age and become fruitful.

SEA WAVES AND SEA SICKNESS.—In our last issue we referred a second time to this subject, protesting against the prevailing error, which is, that sea-sickness to some extent at least, is a consequence of the want of increased size of the vessel, and that as ocean steamers increase in size, passengers will in the same ratio be relieved from sea-sickness. When we demurred, we were told by the editors of the Scientific American that their experience was against us. We have asked, as the result of that experience, a list of their sea voyages, with the names of the vessels,—they have remained silent. We now in the name of humanity, and in behalf of sea voyagers generally, ask for more light, either that *they define* the laws of equilibrium in man and ship, or furnish the data *from their large experience, that some one else* may do it. Shall we have the list?

NIGHT SIGNALS AT SEA.

Y

BY ROBERT POSTANS.

THAT telegraphic signals were used soon after the creation, cannot be doubted. As soon as men began to multiply, a simple beckon of the hand was a signal to advance, and a repulsive movement was a signal to retire. From such a state of things to the present method of dispatching messages from one end of Europe to the other in the space of a few minutes, the progress in this branch of science is pretty satisfactory. And yet the homographic method of conveying intelligence is not totally done away with. It is still practised at sea in all its original simplicity, and often in difficult situations too, when a more explicit method would be desirable; for surely, if there be one object of greater importance than another to an insular people like the British, it must be the safety and welfare of the seaman, upon whom the prosperity of the nation so much depends. And yet it really would seem that if there be one subject upon which the great mass of the community is more supinely indifferent than another, it is the prevention, or rather the mitigation of the manifold causes of shipwreck.

We have no desire to provoke any unnecessary display of feeling upon this subject, particularly in a paper like the present; our object is to attract the attention of the leading maritime nations, such as England, America, France, and Denmark, to the necessity of having one general code of signals for the use of all nations by night at sea. It seems incredible, indeed, in these days of steam-engines, railroads, electric telegraphs, and other scientific inventions, that the enormous interests these countries have at stake upon the ocean, should have been so neglected as to be without a good code of night signals even up to the present hour, and that such clumsy contrivances as "one pistol shot, the waving of a lantern, or a light shown for a brief space of time and then concealed, three taps upon a gong," &c., &c., &c., should suffice to convey the most pressing intelligence that can be sent from one set of suffering human beings to another. That this is the case, any person who has lived upon a part of our coast where wrecks frequently occur, can testify. This indifference to the cherished objects of an Englishman's pride seems very strange, but it not only exists amongst the supreme authorities of the empire, who are proverbially slow to adopt any remedial measure that is brought before their notice, but there really is a reluctance even amongst our own maritime population to take sufficient precaution to guard against the numerous calamities to which they are liable.

If we examine Lloyds' lists of disasters and casualties, we shall find that upwards of 12,000 accidents occurred at sea in four years. Of this great number, 2,665 were caused by collision, the ships, however, having time to run into port in a sinking state. But there were also 883 ships that foundered at sea in consequence of collision, leakage, swamping, &c., making a grand total of 3,548 wrecks and serious collisions.

Now it is fair to presume that the majority of these accidents, involving the loss of thousands of lives and millions of valuable property, occurred at night—at least we are unwilling to suppose that British seamen are such bunglers as to run one another down in this terrible manner in broad daylight.

To perfectly comprehend the importance of having some sort of signals by night at sea, it is only necessary to quote the statistical returns for the year 1855, of the number of vessels that entered British ports coastwise inwards, and cleared outwards. It appears, then, that in the year above named, ninety thousand one hundred and ninety-three British vessels, amounting to a gross tonnage of 7,225,430, and two hundred and thirty-three foreign vessels of a tonnage of 45,070, entered inwards coastwise, while one hundred and four thousand two hundred and seventy-seven British vessels, of a gross tonnage of 8,162,135, and one hundred and ninety-six foreign vessels, of a tonnage of 33,300, cleared outwards.

These numbers, it must be understood, relate only to sailing vessels—therefore of steamers, eleven thousand five hundred and eighty seven British, of a gross tonnage of 2,738,632, and nine foreign, of a gross tonnage of 1,259, entered inwards in England, while eleven thousand four hundred and forty-three British, of a tonnage of 2,621,184, and thirteen foreign, of a tonnage of 2,279, cleared outwards.

During the same year 1855, four thousand one hundred and eighty British sailing sels, of a gross tonnage of 1,323,892, and four hundred and thirty-four foreigners, of a nage of 267,835, entered from the colonies into English ports, while four thousand one dred and forty English, and five hundred and forty-seven foreign vessels, simultane cleared outwards.

And, lastly, the aggregate number of British vessels engaged in the coasting, colonial, and foreign trade in the same year of 1855, was—in England, one hundred and twenty-two thousand and forty-nine, of a tonnage of 14,663,391; in Scotland, twenty-one thousand eight hundred and sixty, of a tonnage of 2.990,131; and in Ireland, twenty-three thousand six hundred and ninety-nine, of a tonnage of 2,990,131; and the number of foreign vessels so employed was—in England, fifteen thousand five hundred and sixteen, of a tonnage of 3,341,-240; in Scotland, two thousand three hundred and ninety, of a tonnage of 274,304; and in Ireland, five hundred and seventy-four, of a tonnage of 114.562.

The above startling array of figures conveys to those that have the courage to wade through them an idea of the very great interest which the maritime population of this empire has at stake upon the ocean. Indeed, these important items demonstrate that if there ever was a nation that cast its bread upon the waters, it is Great Britain; and yet this vast commercial fleet of British and foreign vessels is, to a certain extent, incapable of communicating with the shore, or of exchanging a signal with any neighboring vessel by night, except in a clumsy sort of way, that is a disgrace to the scientific age in which we live.

We have many excellent institutions for alleviating the various calamities that annually occur upon our shores; we have rocket stations, and mortar stations as well as life-boats, provided by that excellent society, the National Life-boat Institution; but, however praiseworthy these means are of saving life (and they are entitled to the highest praise that can be given.) they are, nevertheless, remedial only—they are not preventive. And when one remembers that it is not an uncommon occurrence for a single gale of wind to strew the coast with wrecks, we are surprised that more efficient aid is not afforded to the Life-boat Institution, so as to enable the directors to establish life-boats, and give rewards where they are due. But while we admit that life-boats and mortar and rocket stations are of eminent service in case of shipwreck, yet we are convinced that the number of wrecks would be sensibly diminished if a more efficient code of night signals were established, as thereby the very numerous casualties resulting from collision would in a great degree be avoided.

Before attempting to lay down, even in a rough way, the nucleus of the scheme we have sketched out, we wish to show the urgent necessity that at present exists for some better means of communicating between ships at sea, or between the shore and a stranded vessel, to which all access is cut off by the violence of the waves. And that this latter difficulty is not unworthy of our most serious consideration, we have only to instance the fact that from 1,000 to 1,200 seamen annually perish by drowning in some form or other in the vicinity of the British Isles. With this fearful loss constantly occurring, and with the instinctive desire of the blessing of life, which is part of our common nature, we need do no more than repeat the scriptural injunction of "do unto others as we would have them do unto us," and we hope to be able to show that a simple plan exists which, if enforced by Government, would very materially supply adequate and immediate means to diminish so fearful a sacrifice of human life.

By way of illustrating the dreadful loss of life that is continually taking place in consequence of not having a set of night signals, we will just briefly relate the loss of the *Josephine Willis*, while on her outward-bound voyage from the port of London to New-Zealand. This ship, it will be recollected, was lost off Folkestone in February last, in the following manner: The *Josephine Willis* and a screw steamer, the *Progress*, proceeded down the River Thames in company, their captains being old school-fellows, and they determined to consort together as far as they could, but off the South Foreland, at ten minutes to eight o'clock at night, the *Progress* parted with the *Josephine Willis*, and left her somewhere off Dover to proceed alone down the channel.

At this time the breeze was moderate, and the ship was going seven knots, which she continued to do until she arrived off Folkestone, when suddenly a white light was seen ahead, and a horrid crash immediately followed, and seventy human beings perished in about an hour. The white light was borne by the *Mangerton* steamer, bound to London from Limerick.

It forms no part of our plan to enter into any inquiry why there was not a better look out kept on board of both vessels, or why the *Mangerton* backed away from the *Josephine Willis* in her wrecked state, and so kept aloof from the sinking ship. We shall content ourselves with merely drawing the reader's attention to the fact, that the *Mangerton* steamer fired rockets, burnt blue lights, and did all that a vessel in her condition could do to attract attention by means of such night signals as the present imperfect system admits of, and—if we except the tardy arrival of the *XL* of Deal, one of those vigilant sentinels ever on the watch—all to no purpose. The Deal lugger, however, fortunately came up in time to pick

off seven poor creatures from the topgallant rigging of the *Josephine Willis*, whose hull, with seventy unfortunate human beings, was, before she could reach the scene of the disaster, at the bottom of the sea.

And where was the *Progress* steamer all this time? Why, she was about five or six miles off standing down channel. The captain of the screw saw the rockets fired by the *Mangerton*, and imagined that some vessel wanted a pilot, as rockets are sometimes used for such a purpose. Impressed with this idea he did not go to the assistance of his friend, the captain of the *Josephine Willis*, neither did the boatmen on the beach at Folkestone put off in their boats to the assistance of the sinking ship, although it is difficult to imagine that the rockets were not seen by them. But, as the present clumsy and inefficient system of signals by night conveys no positive information, no manner of blame is attached to any one. And the reason is obvious, rockets and blue-lights are only so much *fireworks*; like guns, gongs, bells, &c., &c., they tell no tale—that is to say, no specific tale. They mean something, doubtless, and, coupled with the state of the weather, the position of the vessel, and other circumstances, and also assisted by that sort of *freemasonry* that pervades more or less all classes of our maritime population, and by which they understand the signs of their profession, a shrewd guess is often made of what a vessel requires; but generally, if it is necessary to know what a captain really wants when he fires a rocket, his ship must be boarded, unless, of course, it is a preconcerted signal arranged beforehand.

Now this was exactly the position of the captain of the *Progress* screw steamer. He saw the rockets, and supposing that he had known that it was his friend the captain of the *Josephine Willis* that was firing them, he would naturally conclude that, as he had left him only about an hour previous with a stout ship under him, all well, with a clear night and a moderate breeze—that he had not in that short space of time, and in such weather, come to any harm. Besides, as rocket signals mean anything, a seaman likes to arrange beforehand, and as the *Josephine Willis* and many other ships were in what is called "pilot's water," or rather in the cruising ground of the *Trinity* pilot cutter, he imagined very naturally that some vessel wanted a pilot, and of course he stood on his channel course, and unwittingly left the *Josephine Willis* and the damaged *Mangerton* steamer to their fate. However, before clearing the land altogether, it was necessary for the *Progress* to coal, and she ran into one of the western ports for that purpose, and then, for the first time, the true meaning of the rockets was comprehended, for the captain of the *Progress* read in one of the daily papers, the harrowing description of the fearful loss of life in consequence of the *Mangerton* steamer running down the *Josephine Willis*, and sending her and his old friend and schoolfellow to the bottom of the sea.

There is evidently something wrong in such a system of night signals as allowed a ship like the *Josephine Willis* to lose seventy lives in about an hour, with a friendly steamer within signal distance, and close to a shore such as Folkestone, swarming with the handiest and most daring boatmen in the world. And why is this allowed to continue? There are doubtless, amongst the 12,000 and odd casualties reported at Lloyds', many similar occurrences to the poor *Josephine Willis*—particularly when we call to mind that out of that number, the very large amount of 3,548 vessels were lost by wreckage and collision, showing that this very fruitful catalogue of disaster occurs more often at night than by day, and therefore implying a necessity of a better system of signals than those at present in use.

Now suppose that rockets, instead of being liable to misconception, really conveyed positive intelligence—suppose, for instance, that the captain of the *Progress* screw steamer had understood that his friend was at his last extremity, and that his ship, the *Josephine Willis*, was sinking rapidly, what would have been the result? Every seaman has a ready reply to such a question—why, he would have turned his vessel's head round, and steamed down to her aid as fast as he could. And what might have been the result of such assistance? Why, in all human probability, he would have saved the lives of all on board; for it must be borne in mind that the *Josephine Willis* did not sink until upwards of an hour after she was run down by the *Mangerton* steamer, and yet she lost seventy lives in consequence of the confusion, or something else, that prevailed on board both vessels after they came into collision. It is, therefore, not presuming too much, when we say that, under the sanction of Providence, all hands might have been rescued from a watery grave, if the captain of the *Progress* had understood the meaning of the rocket signals, and run down to the assistance of his friend, fresh and undamaged as his vessel was. But no blame can be attached to him, for rockets at present are only fireworks; and, used at sea, they may indicate a ship's position, recall a boat, dispatch one, or convey any preconcerted intelligence, but there their utility ends.

One might almost imagine that it is difficult to remedy this state of things, or else such

dreadful losses of human life would not be permitted in a crowded seaway like the English channel, and within signal distance of a shore covered with boats and boatmen. But we would ask, what is to prevent the adoption of a rocket composed of red fire to distinguish it from the common rocket now in use at sea? and which red rocket is only to be let off on occasions of imminent danger; such, for instance, as that of the *Josephine Willis*, or indeed any other calamity that may happen at sea where prompt assistance is needed.

From what we have stated, it is evident that some such simple mode of conveying a positive message ought to be adopted by ships when in imminent peril; and as rockets are admirable signals, and can be seen a great distance, it would be very desirable if they were made intelligible. Give them a tongue, and they will speak as plain by night as the union-jack reversed does by day. Every seaman, indeed every man in these islands, understands what the one means: why should not a red rocket be equally intelligible? Let it be understood that a RED rocket means DISTRESS, then we shall be in a fair way of putting an end to such a dreadful calamity as that of the *Josephine Willis*. At all events, it is difficult to suppose that a similar occurrence could take place if such a danger signal was known to exist.

And all that is necessary to be done to bring about this desirable result is an order from the Board of Trade and Navigation. For the board is empowered, by the 301st section of the mercantile shipping act, to enforce every steamship and other vessel carrying passengers to carry twelve blue-lights, or twelve port-fires, and a cannon with ammunition for twelve charges, or such other means of making signals, if any, as may have previously been approved of by the board. Under the provisions of this act, what is to prevent the board ordering that every vessel carrying passengers, such as emigrant and other vessels, should also have twelve red rockets, to be used only in cases of extreme danger? The affair is remarkable for its extreme facility of execution—there is no cumbersome machinery to put in motion—there are no new laws to be enacted—an existing one contains a clause giving full power to the Board of Trade to extend the means of making fresh signals, subject to their approval; and then, red rockets are easily obtained, so that it would seem that all that is wanted is an order from the Board of Trade, stating that a new signal of distress by means of a red rocket has been added to those already in force.

But the subject of intelligible night signals at sea is capable of vast expansion, nor is it beside our purpose, as the leading maritime power, to bestow a thought upon this subject. Any professional reader, accustomed to the use of signals either at sea or on shore, can readily comprehend how a code of night signals by means of rockets might be arranged upon the following plan. Thus, for instance, if we take the alphabet as a base, and use colored rockets, a set of signals seems a matter of slight difficulty; at all events, we throw out the following nucleus of a scheme, leaving the question with its necessary modifications (which the good sense of every one will import into this statement) to the consideration of our professional readers.

What then is to prevent a system of rocket signals composed of 2oz., or quarterns as the pyrotechnists call them, being used by night, in the same way as flags are used by day? It is very easy to make rockets in a great variety of colors, and to give them almost any form. This was shown at the peace rejoicings in Hyde Park and on Primrose Hill. We there saw rockets with red stars in their heads—rockets that showered down red, green, blue, and yellow rain—rockets composed of mixed colors, that is to say, rockets that ascended as white rockets and changed to red, or ascended as a red rocket, and came down yellow, and so on through all the colors that are in use. By these means an infinite variety of combinations might be made that leaves no room to doubt the feasibility of the plan if it was only once put into execution.

The following statement will perhaps assist to explain our views:—

A.—Red	1
B.—Red changeable to white	2
C.—Red changeable to blue	3
D.—Red changeable to yellow	4
E.—Blue	5
F.—Blue changeable to white	6
G.—Blue changeable to red	7
H.—Blue changeable to yellow	8
I.—White	9
J.—White changeable to blue	10
K.—White changeable to yellow	11
L.—White changeable to red	12

M.—Yellow	13
N.—Yellow changeable to red	14
O.—Yellow changeable to white	15
P.—Yellow changeable to blue	16
Q.—Blue with yellow stars	17
R.—Blue with red stars	18
S.—Blue with white stars	19
T.—Red with blue stars	20
U.—Red with yellow stars	21
V.—Red with white stars	22
W.—Yellow with a report	23
X.—Blue with a report	24
Y.—Red with a report	25
Z.—White with a report	26

Thus, for example: suppose it was necessary to give an order during the night for an anchor and cable to be supplied to a ship that was drifting in the Downs, and the sentence was opposite to D., the captain of the vessel would of course fire a red rocket changeable to yellow. But such a system of signals as the above would be used with advantage in the navy—for instance, suppose it was necessary for an admiral to give an order during the night, "Form close order of battle—ships head to the N. W.," and the sentence was opposite to K., of course a white rocket changeable to yellow would convey the desired information to the fleet.

If it was necessary to add to the number of the signals, this might easily be done by firing rockets with reports and red stars, rockets with reports and blue stars, &c., &c. But, however, without pretending to suppose that the above system is perfect, yet we believe that a good system of night signals bymeans of rockets can be obtained, combining cheapness and utility, and so as to answer all the purposes of flags by day, and even at greater distances.

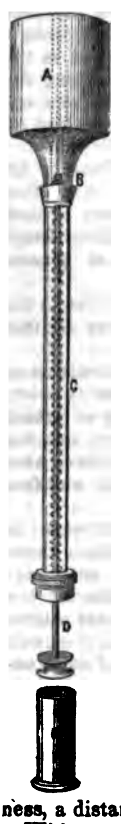
If we remember right, a medal was awarded for a code of night signals similar to the above, by the Commissioners of the Exhibition of 1851, but we believe that was all that was ever done in the matter.

A red rocket was until lately the most difficult to keep of all colors, as the chemicals of which it is composed had a great tendency to attract moisture; and indeed most fancy colors were once considered inadmissible in ships, in consequence of the ingredients of which they are formed. But such is the advance now made in pyrotechnical chemistry, that the above difficulties and many others of a similar nature are removed. And we believe that rockets of any color and form desired can now be made to keep in any climate, and free from all danger of self-ignition.

Although these few remarks are intended to attract the notice of persons interested in maritime affairs to the necessity that exists of some more intelligible signals than those now in use by night at sea, yet at the same time we cannot help thinking that such signals might be made very serviceable on shore. In the Crimea, for instance, during the night sorties at Sebastopol, a good system of signals would have been of great utility. Many valuable lives might have been saved during theconfusion of those attacks, if signals could have been conveyed to men not within the sound of the bugle. In many of these encounters by night, our men were overpowered and helpless for want of means of communicating with their supports, and which supports knew nothing of the night conflict until the daylight revealed the unequal fight their comrades had sustained.

Next to having a good system of night signals, the most important consideration is the means of ignition. In her Majesty's service, the common blue light was, and is perhaps even up to this time, ignited by means of a slow match or portfire, and, in cases where a signal light is required to be exhibited, the means of lighting are extremely difficult to procure; but a new instrument, invented by Robson, of the Ammunition Laboratory, Woolwich, is a very simple contrivance, and combines safety with utility, so essential on shipboard. Every seaman knows how difficult it is to let off even a common blue-light at the very moment desired, particularly in wet and blowing weather, and if to these inconveniences be added the confusion and alarm always to be found on board a vessel when in danger of sinking from collision or other cause, it becomes very desirable to have an easy and prompt means of ignition ready at hand. There is even a greater necessity now than formerly for prompt ignition of blue-lights, rockets, and alarm signals, in consequence of the great development of our commercial marine, particularly in steamships, and the in-

creased risk of collision by night. It therefore becomes necessary to have a ready means of indicating a ship's position at hand in a crowded seaway, particularly when a vessel is suddenly discovered in one's vicinity. Robson's newly invented instrument for discharging signal lights supplies this want, and enables the officer in charge of the deck to exhibit a light instantly in any weather. One of its great advantages consists in its portability, for it can be carried in the pocket ready for use, and in five or six seconds, indeed as readily as a pistol can be cocked, it will display a light that would serve to indicate the true position of a steamer or other vessel, and might prevent a catastrophe. It also possesses this further recommendation—that it is entirely free from danger—and has met with the entire approval of the Lords Commissioners of the Admiralty, after long and severe trials on board the *Excellent*, at Portsmouth. It has also received the sanction of the French Commissioners at Cherbourg, as well as the Artillery commission, and the American government has reported favorably upon it, as well as upon the signal lights made at the same laboratory, and which it so effectually and instantaneously ignites in any weather.



By referring to the accompanying description in the diagram, the principle and manner of using the instrument will be easily understood.

A.—The signal-light.

B.—A percussion-cap, which explodes and ignites the signal-light, when pierced by the iron needle beneath.

C.—A brass tube or barrel, containing an iron needle, which is retained in its position by a coil of wire.

D.—The trigger, or handle, for discharging, which operation is performed by pushing the handle and forcing the needle through the cap, when ignition instantly takes place. The needle is then forced back into the position shown in the diagram by the coil of wire.

E.—A brass cover, to protect the trigger, and which is taken off before the instrument can be used.

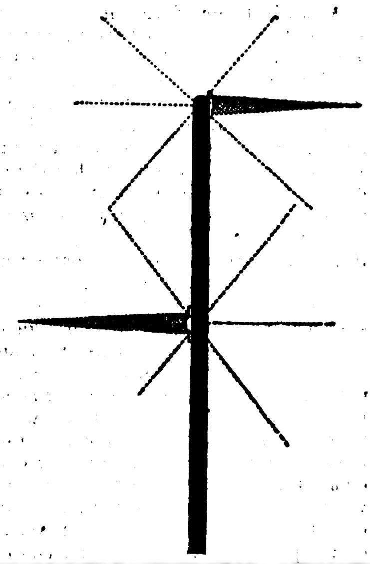
The great advantage of this discharger is, that it can be fired instantly in any weather; and even if a man is in the rigging, and is compelled to hold on with one hand, he can fire a signal with this instrument by merely striking the handle against his side, which forces the needle into the cap and explodes it. But the greatest of all considerations is, that there is no looking out for a match, no seeking for a fire. Here everything is ready, and all that is required to produce a brilliant light is a slight tap of the hand, as before mentioned. How many vessels might avoid collision in dark nights, if one of these useful instruments ready charged with a signal-light was kept slung in some well-known place on deck; for it often happens that before a slow match can be lit, and the common blue-light now in use in her Majesty's navy found and ignited, that the collision has taken place, and, as in the case of the *Josephine Willis*, scores of lives lost. With this instrument a light can be shown as instantaneously as a pistol can be fired, an advantage that can scarcely be overrated in situations at sea where moments are sometimes so precious that delay is not merely dangerous, but death.

The new signal-lights above mentioned are superior to the common blue-light, and are made to burn red, blue, green, or discharge balls of fire, and are moreover perfectly safe, either on board ship or if kept in store. Some of these lights have been kept on board the *Excellent* for three years without any deterioration. One of these lights, measuring two inches in length and one in diameter, was experimented on, and fired from Shakspeare's Cliff, near Dover, and which was distinctly seen, and the color distinguished, at Dungeness, a distance of twenty-three nautical miles in a straight line.

With respect to rocket signals, although they might be used in the navy for telegraphic purposes, yet they are open to objection in the commercial marine on account of their expense, which might deter captains and owners of small trading vessels from using them for ordinary purposes; therefore another method of communicating by night is here submitted for the use of the service. We believe that, if any individual had sufficient influence to induce the government to make a trial of this plan, it might become one of the most efficient means of telegraphing by night at sea ever known.

The annexed diagram will remind the reader of the Semaphore, formerly used at the Admiralty, but since the introduction of the electric telegraph it has been taken down and its use restricted to railway stations, where its movable arms denote the passage of a train, &c. This useful machine consists of a perpendicular pole, and one or more movable

boards or arms, which, having a pivot, can be made to assume the form of various well-defined angles, and it is worked by machinery by a man below. It is unnecessary to describe the machinery by which the arms are moved or made to rotate, it being enough for our present purpose to know that it is very simple in its operation, and easily performed. Of course the movable arm can be put into any one of the angles shown in the annexed diagram, and if there be a double set of arms, the angles can be varied to an almost endless variety.



It appears to us, taking this day Semaphore as a guide, that all that is necessary to turn it into a night Semaphore would be to substitute for the wooden arms two or more lanterns, with powerful lenses and a strong light. The policeman's lantern, with its "bull's eye," is a familiar example of the light suggested. That, however, represents only in a faint degree the beam of light that can be flung or projected into surrounding darkness by means of a powerful lens. The lens to be employed might be about a foot square, and should be formed of separate rings or zones, whose common surfaces preserve nearly the same curvature as if they constituted portions of one complete lens, the interior and useless part of the glass being removed. To form a lens of such a magnitude out of one piece of glass would be very difficult; besides, the necessary thickness of the glass would greatly obstruct the light. The merit of the invention, then, consists in building it of separate rings. There is also this additional advantage in this method, and that is, the lens may be built to any size, and yet not be increased in thickness, and may be made square, so as to economise any portion of light emitted. It should be mentioned that these lenses are in common use in all revolving lighthouses upon the dioptric principle.

A ray of light sent through this sort of lens is not scattered or diffused, but it is a straight, luminous, well-defined beam, as distinct as a sunbeam when passing through a darkened room. Now, what is to prevent this luminous pencil or beam of light performing the same office as the wooden beam or arm in the day Semaphore? All that is required is to arrange a lantern with a revolving hinge to an upright pole, or even to the mast of a ship, having a graduated stop or indicator to mark the proper angles, as a guide to the operator.

That a light of this kind would be seen by night as distinctly as the beam or arm of a Semaphore is by day, no one can doubt who has witnessed the experiment. With the aid of a telescope, the figures formed by the angles may be seen for miles without confusion or blending.

This light might be increased in intensity if electricity were used, but as that would require an electrician and an apparatus on board, such a scheme cannot be of course adopted in our commercial marine; but we are satisfied that the subject is worthy of the consideration of the great steam-packet companies as well as the Board of Admiralty.

It is impossible, however, to foresee every objection or every alteration that might be made with advantage in the apparatus or in the light itself. Local circumstances at sea, or on land, may require some change in its construction. All that we have attempted to do, is to suggest and explain the principles of a novel application of a strong ray of light for telegraphic purposes, leaving the various uses to which it may be applied to future practice and experiment.

In a military point of view, we cannot forbear observing that, independent of its being used as a mode of speedy correspondence at night, by which an immediate communication might be kept up with the main body of an army and its outposts, secret directions might be given without the general alarm occasioned by the firing of cannon, which has the inconvenience of putting the enemy on the alert.

But the general use of some simple code of night signals for merchant vessels is what is most wanted, particularly on occasions where instant aid is required; and we cannot avoid repeating that, if a red rocket as a distress signal were universally adopted, many valuable lives might be saved thereby.

As an instance of what may be done by the unwearied exertions of one individual, it was stated at the death of Captain Manby that he had been instrumental by his life-preserving apparatus in saving 1,000 human beings from a premature death on our coasts alone, and the National Lifeboat Institution, since its first establishment in 1824, has rescued, by means of its boats and other means, 9,222 persons from death.

The adoption, then, of some well-known signal, as before observed, is a necessity that is becoming more urgent every day; but this cannot be done by any power of less magnitude and authority than the united legislature of the leading maritime states. The voices of individuals are raised in vain, unless self-interest or some power stronger than humanity shall urge shipowners and others possessing this kind of property to advocate the necessity of a change. Human life is priceless—it is invaluable—but somehow it is the least regarded. Ships and cargoes, however, have a money value, and those destroyed on our coasts alone amount to between two and three millions sterling annually. Let us urge, then, upon those who are interested in these precious things, to adopt by every means in their power some systematic and judicious danger signal by night at sea. We all know how indifferent seafaring people are about themselves, and that neither boats nor any other means of saving life are ever available when the terrible emergency occurs. There is no use disguising the fact, that the whole system of making provision for saving life is regarded both by seamen, passengers, and shipowners with indifference, and is almost obliged to be enforced by Act of Parliament. We cannot therefore expect, until people are made acquainted with the startling losses that annually occur, and are thereby made sensitively alive to their own interests, that there can be any amendment. We have raised our feeble voice as a warning against this dereliction of duty, in the earnest hope of drawing attention to the incalculable amount of misery inflicted by such disasters as collision and shipwreck, not only on the poor seamen who are the victims, but also on their widows, orphans, and other relatives.—*U. S. Mag.*

HIGH-PRESSURE STEAM FOR MARINE PURPOSES.

The *Leeds Mercury* has the following:—On Sept. 11th, an interesting trial took place at the railway foundry, Leeds, in the presence of the Government inspector, and other scientific persons, of a novel application of locomotive high-pressure machinery to marine purposes. The machinery, which has been arranged and completed from designs of the engineer of the works, is intended, we understand, for a screw steamer recently launched at Hull. Nothing could apparently be more admirable than the smoothness and facility with which the machinery worked, a speed of 120 revolutions of the screw shaft per minute being obtained from the direct action of the engines, without the intervention of multiplying gear. This quickness of piston motion, which is not attainable at low pressure, is one of the main advantages of the application. Another is the great saving of space and weight, amounting to more than one-half. But what seemed to excite admiration most, was the ease and quickness with which the motion was reversed, which on Thursday was repeatedly effected under unfavorable circumstances, and against the full steam pressure of 140 lbs. on the inch, seven and eight times within thirty seconds. Upon the whole, it is not too much to say, that this very admirable arrangement bids fair to supersede all other applications of steam power to marine purposes, especially for screw steamers.

YACHTING.

THE "Chambers' Journal" contains some interesting and amusing truths in reference to Yachting. Doubtless, our transatlantic friends have learned that Americans are quite as expert in sailing yachts as in building them. Notwithstanding they have the yacht *America*, they can hardly be familiar with all the essential principles embodied in that significant structure, without taking her apart to examine and analyze the elements of her construction. While our English friends are gathering lessons of experience from the past, they must *not* assume that if it were again necessary to sustain our national honor and exhibit the superiority of our nautical mechanism and maritime skill in a trial of speed in foreign waters, that we would not surpass our best efforts in 1851. The principles developed in the model and construction of the Bombay fishing boats referred to, are well understood in the United States, and must compel the thinking man to admit that there remains much to be learned, both in building and sailing yachts, on both sides of the Atlantic.

"A yachtsman, like a poet, must be born with a leaning towards his vocation: he must have an inherent love of salt water, and be destitute of that hydrophobia—which, by the way, rabid animals do not possess—which prompts one to avoid water as much as possible, and makes him think he would much rather walk the dry land, "like a thing of life," with a dry jacket and an appetite for his dinner, than walk the waters like a half-dead-and-alive creature, with a reeling brain and nauseating stomach.

If a "wet sheet" be synonymous in his mind with a wet blanket—if he be scrupulous about contaminating his hands with tar and grease—if he require punctual meals and undisturbed nights' rest—if he be of precise habits and formal notions, let him stay on shore; he will never make a yachtsman.

Except for a short sail on a very fine day, we should give the same advice to our lady-readers. Ashore, they are truly, as the Persian poet sings, "the roses in the flower-garden of our existence;" but transplanted to the deck of a yacht, they become briars and thistles, alike useless, inconvenient, and unsightly. If a lady get a fall from her horse, or tumble into a pond, or sink in a swoon from fright, or any other cause, or no cause at all, there may be some romance in rescuing and consoling her, though her garments be smeared with mud or covered with dust, and her hair disordered; but sentiment and sea-sickness cannot possibly exist together. The [illegible] devoted admirer will never sympathise with, seldom even pity, your [illegible]ings. If he be well himself, he will chuckle internally at the proud [illegible]ness of his immunity from such a misfortune; and if he also be ill, [illegible] peculiar misery is too absorbing to admit of any compassion for [illegible]

To all such persons a yacht is anything but a [illegible] a man has a real taste for amateur seamanship, and [illegible] and, above all, sufficient means for the purpose, [illegible] enjoyable, fascinating pursuit.

As sociability was found considerably [illegible] this amusement, various associations, styling [illegible] clubs, were formed in various ports of the United [illegible]

and stations are as follows: Royal Squadron, Cowes; Royal Cork, Cork; Royal Dee, Chester; Royal Eastern, Edinburgh; Royal Harwich, Harwich; Royal Irish, Kingstown; Royal Mersey, Liverpool; Royal Northern, Firth of Clyde; Royal Southern, Southampton; Royal St. George's, Kingstown; Royal Thames, London; Royal Victoria, Hyde; Royal Welsh, Carnarvon; Royal Western of England, Plymouth; Royal Western of Ireland, Valentia; Royal Yorkshire, Hull and Whitby; Royal London, Thames; Prince of Wales, Thames.

Each of these clubs has its own admiral and vice-admiral, or commodore and vice-commodore, committee and secretary, its own flags, which being issued by special Admiralty warrant, entitle vessels sailing under them to certain privileges, such as exemption from harbor-dues, etc., not only in home, but foreign ports. They have also their distinct case of rules and sailing regulations. The difference in the latter is often productive of confusion, particularly that for the measurement of tonnage, the method for finding which varies so much, that the difference of several tons is often the result.

It would seem to the uninitiated an easy matter to determine the exact measurement of any vessel, but this is far from being the case. The best method in vogue does not pretend to do more than closely approximate to the correct capacity; and this difficulty is considerably increased by the common practice of purposely building yachts to evade these rules and measure less than their real tonnage, which can be done in several ways, interesting only to those who are conversant with such matters.

This is not considered to be taking an improper advantage, as in love, war, and yacht-sailing, everything is considered fair. There is, perhaps, as much jockeying in boat-racing as in horse racing; and though the sailing-regulations are apparently most stringent, yet means may be found of evading the spirit of many of them, without actually infringing the letter. The proper trim and handling of any craft are even more necessary to insure victory, than the seat and touch of the jockey. The celebrated schooner *America*, when she first came over, was supposed to owe her speed entirely to the formation of her hull and cut of her sails. Dozens of yachts were built on her lines—all of them failures, too—sails were cut to stand like hers; but as soon as she passed into another's hands, it was found that, like the wonderful lamp, all her virtues consisted in the knowledge of the owner how to bring them into play.

Local knowledge of the coast and harbors is nearly as useful in racing as smart seamanship; and though a right line is unquestionably the shortest distance between two points, yet the skilful pilot well knows that if, by diverging considerably from the direct course, he can avoid an opposing tide or avail himself of a favorable current, he will arrive at the goal long before those who pursue the straight course all through. All the principal regattas are now held under the patronage and direction of some yacht-club in their vicinity; and in consequence the prizes are larger and the attendance more respectable than it could be otherwise.

This has induced great competition, and consequent improvements, in yacht-building; so much so, that the greatest clippers find themselves, as it is termed, "built out," in the course of a couple of seasons; that is to say, some newer rival starts up, which triumphantly defeats them, and maintains her post of pre-eminence in every match, until she is in turn outsailed by another.

There is no doubt, however, that comfort and seaworthiness have, in consequence of this competition, been sacrificed to speed. It is impossible for fair sea-going boats to carry the spars and canvas used in racing; and many of the yachts which are carrying off prizes this season are mere shells, without cabin fittings or internal accommodations of any kind, as it is found that bulkheads, or anything which lessens the elasticity of a vessel's sides, diminishes her speed.

With one exception, all these clubs are of recent date—nearly all of them having sprung up within the last twenty years. The exception is the Royal Cork Yacht-club, which dates back to 1720, and is doubtless the oldest society of the kind in the world.

The old rules, as they existed in 1720, are still extant, and some of them are so characteristic of the good old times as to be worth transcribing.

Rule No. 2 directs "that no admiral do bring more than two dishes of meat for the entertainment of the club." The apparent moderation of this "poor halfpenny worth of bread" is rather put out of countenance by the "intolerable deal of sack" which follows, as it appears by No. 3, that it was "resolved that no admiral presume to bring more than two dozen of wine to his treat, for it has always been deemed a breach of the ancient rules and constitutions of the club, except when my lords the judges are invited." Rather a doubtful compliment to their lordships; but it proves there must have been good heads on the bench in those days. After such copious libations, we cannot but commend the prudence of No. 16, which directs that "all business of the club be done before dinner, except appointing the time of the next meeting, or presenting, mulcting, or levying fines." No. 9 orders "that no long-tail wigs, large sleeves, or ruffles, be worn by any member at the club." No. 14 says, "that such members of the club, or others, as shall talk of sailing after dinner, be fined a bumper." We wonder how often this rule was infringed, both unwittingly and of malice aforethought, and how willingly did the culprit pay the penalty. It would seem, however, that as time wore on, and it ceased to be a necessary qualification for a gentleman to be able to carry himself discreetly with half-a-dozen bottles under his belt, the good old Irish gentlemen resolved to conform to the custom of the times, and stint themselves in their liquor, for we find an edict added, dated the 21st of April, 1737: "Ordered, that for the future, unless the number of the company exceed fifteen, no man be allowed more than one bottle to his share, and a peremptory." What is meant by a "peremptory" does not transpire; but it probably was meant to express an unknown quantity, varying according to circumstances, with the inclination and capability of the individual—like the Scotch bittock, which means any distance from half a mile to five.

A list of members, commencing with Lord Inchiquin, is appended, and a list of sailing-directions, which are quaint enough in their way, but would hardly pass muster in these degenerate days. Some of them, however, are worthy of being retained, particularly that one which provides for the unpleasant but common contingency contemplated in the regulation beginning: "If a captain has anybody very sick on board him," etc.

Yacht-clubs are not confined to the United Kingdom, but are scattered over various parts of the world—St. Petersburg, Antwerp, and Rotterdam, westwards to New-York, and eastwards to Bombay. The last-named harbor is admirably adapted to yachting. For six months in the year a fi steady sea-breeze prevails all day, from 11 A.M., which seldom, as long

day-light lasts, subsides into a calm, or rises to a gale. The wide expanse of water gives a scope and variety which can seldom be found elsewhere; the shores are picturesque and varied; numerous islands, wooded to the water's edge, are scattered over its surface; and on these, within a few miles of the hum of commerce and centre of eastern civilization, may be found the original jungle, uncultivated and silent as it has been for countless ages past; that perhaps more silent, for in one of these islands is the eighth humbug of the world, the far-famed Caves of Elephanta, as the English call them, though their real name is Garipoora. They are curious, certainly, from their remote antiquity—too remote to be correctly ascertained, but hardly repay the toil of the long ascent, under a burning sun, of the steep, uneven path which leads from the landing-place to the top of the hill where the caves are situated. The view from the summit is better worth seeing than the caves; not only of the fine sheet of water which forms the harbor, but the innumerable variety of European and native craft. Some of the latter look most picturesque in the distance. When running before the wind, they boom out a lateen-sail on either side, and the yards pointing upwards in opposite directions, appear exactly like the pinions of a sea-bird resting on the water, and just preparing for flight; but when they approach nearer, you perceive that the hull, built on the lines of Noah's Ark, is clumsily made and ill put together; the scanty rigging composed of different kinds of ropes knotted together; one mast bends gracefully forward, whilst the other is tumbling back towards the stern; the rudder and other appliances are of the most primitive description, and there is more than one "Kinsale reef"* in the canvas.

Yacht-races frequently take place under the auspices of the Bombay Club; the manner of conducting which, and the vessels that run in them, are quite the opposite of our European customs and ideas.

At regattas in this country, all yachts start together, the time for difference of tonnage being allowed according to a fixed scale, on their arrival at the winning flag-boat. Schooners are given more in proportion than cutters, in consequence of the disadvantage they labor under when beating to windward.

At Bombay, the time allowed is given at starting, the one receiving most time starting first, and the others in succession after her, when the prescribed interval has elapsed. In arranging this time, the stewards do not pay so much attention to the size, as to the rig and reputation for speed of the different yachts. Some of these are of the description called Bombay fishing-boats, and are so fast that no cutter or schooner can compete with them without receiving long odds: one of them has been known to give a schooner several tons larger than herself an hour's start, and beat her well. It is surprising that boats of this kind have never been introduced into England, as they are probably the fastest in the world in moderate weather and a fair wind. Their great drawback is that, in turning to windward, they are obliged to wear instead of tack—that is to say, go round with their stern towards the wind. In doing this, there is not only the loss of time in describing two-thirds of a circle, instead of one-third, but also the disadvantage of going bodily away to leeward. In tacking, every vessel "fore-reaches" more or less—that is to say, when thrown up in the wind, her impetus carries her some distance in the right direction. In wearing, the reverse of this is the case.

* *A term used by* Kinsale hookermen to express a large hole in the mainsail.

The Bombay fishing-boats carry one very small mast and one very large lateen-sail. The short mast is stepped far forward, with a slight rake towards the bows—on this is hoisted an enormous lateen-sail. Some idea of their spread of canvas may be formed, when it is stated that a boat of eighteen tons often carries a yard eighty feet long. The formation of the hull varies considerably from our European ideas of speed and symmetry; but the chief peculiarity is, that they draw considerably more water forward than aft; whereas all sailing-vessels, of every rig, in this country, are precisely the reverse of this, being deeper aft than forward. It is quite evident to any one who has ever seen the model of a Bombay fishing-boat, that if they are right we must be wrong.

Brother Jonathan has already somewhat opened the eyes of our yachtsmen to the fact that they have still a great deal to learn, and given them a lesson which they do not appear to have forgotten as yet—at least, no one has accepted the fair and manly challenge given by the owner of the *America*. It was to the effect, that having come over and defeated English yachtsmen on their own ground, he would consider himself master of the field until some of them came over to New-York and did the same by him; when he would not only endeavor to shew them good sport, but also to return some of the hospitality and kindness he had received from them.

The "log of the *Pet*" is a curious and interesting record of what a small craft of only eight tons can accomplish in skilful hands. Previous to Mr. Hughes' cruises in the Baltic, most persons would have considered such a project chimerical, and its results certain to be disastrous; and even now, though its having been twice successfully accomplished, places its possibility beyond a doubt, yet the repetition of such a fact can hardly be considered safe or prudent. Setting safety aside, there can be no comfort at sea, being in a cabin where there is not room to swing a cat. To be sure, the owner might say with Master Richard, that as he was never likely to have occasion to resort to so inhuman a practice, that was of no consequence to him.

HONOR TO WHOM HONOR IS DUE.—The New-York Yacht Club, of which Mr. Steers was a member, have very properly borne testimony to his memory, and paid a tribute of respect to the same, in the passage of the following resolutions:

NEW-YORK YACHT CLUB, New-York, Sept, 30, 1856.

MADAM,—I have the honor to present you, herewith, a copy of the resolutions passed at a special meeting of the Yacht Club, called by order of the Commodore, to consider the sad event to which they refer, and with assurances of my personal respect and sympathy in your affliction, I am, Madam, N. BLOODGOOD, *Rec. Sec.*

To Mrs. Geo. Steers, 91 Cannon-street, New-York.

NEW-YORK YACHT CLUB, New-York, Sept. 30, 1856.

At a special meeting of the New-York Yacht Club, convened by order of the Commodore, Sept. 29, 1856, on motion of Lewis M. Rutherford, Esq., the following resolutions were passed:

Resolved, That we have heard of the death of our fellow-member and friend, George Steers, with feelings of sincere sorrow and profound regret—that to his genius and skill this Club is indebted for its most beautiful and successful models.

Resolved, That his connection with the New-York Yacht Club, from its earliest infancy, has been a source of pride and honor to that institution, and that his amiable personal qualities, and his high and unbending integrity, have secured to him the respect and affection of those who were connected with him socially and professionally.

Resolved, That we tender our warmest sympathy to his bereaved family, and that the Secretary be instructed to furnish to his widow a copy of these resolutions, and that the same be put upon the records of the Club. N. BLOODGOOD, Recording Sec.

THE DECIMAL SYSTEM OF COINAGE AND VICTORIAN SYSTEM OF WEIGHTS AND MEASURES.

A correspondent of the *London Mechanic's Magazine* has written the following, on the Connection between a Decimal System of Coinage based on the Sovereign, and the proposed Victorian System of Decimal Measure and Weights.

1,000 cubic inches of water at the temperature of 62° Fah., or 16.67° centi. weigh 252,458 grains. 1,869 sovereigns weigh 40 lbs. troy = 230,400 grains. From these we find that 4,000 sovereigns weigh 1953.18791 cubic inches of water, at 16·70° centi. If this bulk of water be taken at 16.5° centi., and be reduced to cubic eighths of an inch, we shall have 1000005. 23526. The cube root of this is 100.00017451 nearly. If we add 4 eighths of an inch to the length of our present foot rule, and make it to contain 100. it will differ from the "Sovereign" foot by 0.00017451 of the eighth of an inch, being about *one-tenth of an inch in a mile*. In all that follows we shall consider this difference so trivial, as not to be worth notice in our exposition of the system.

The cube of this will give us a bushel containing 1953.125 cubic inches, the present bushel containing 2218 cubic inches. This bulk of water will weigh over 70 lbs.; this divided into 10,000 grains will give the Victorian grain = 2.03 old grains. The Victorian ounce will be equal to 1.127 avoir. and 1.027 troy ounces. The sovereign will then weigh *exactly* a quarter of an ounce, and the Mint price of gold will be *exactly* £4 per ounce, and 4 mills per grain.

If the above found length be taken as a fundamental unit of measure of length, surface, capacity, and weight, we shall have the following advantages.

As to length. We shall not disturb the manufacture of the millions of articles now measured by the inch and the eighth of an inch. Every board, bar of iron, rope, chain, &c.; the millions of bolts and nuts screwed with Whitworth's thread, every part of the steam engine, and other machinery, will still be measured as before, and, what is of more consequence than everything else, the workman will still have a rule that he can conveniently use and carry in his pocket. In one respect it will be better, as it will give a little larger radius, or scale for the logarithms on the slide. 10,000 of these feet, which we propose to call "Peds," will give a mile measure of nearly two of our present miles, or 1.973. Of these miles we shall have.

Diameter of the earth.... —	4010.45	Quadrant................	3149.8
Circumference..............	12599.2	Degree..................	34.998

As to surface. We shall have a Victorian rood = 0.997 old rood, and also = 1.007 French decares. 1.974 French arpents d'ordonnance, and 1.981 Scotch acres will equal 10 Victorian roods.

As to capacity. Whenever we have the length, breadth, and depth in peds of any bulk of grain or liquid, we shall have the exact number of bushels, or gallons, without any more figuring.

As to Weight. Every table of specific gravities will then become a table of the exact weights of cubic peds, and of the divisions and multiples of a ped. A cubic foot of water now weighs 62.32106057¼ lbs. avoir. or 997. 137 ounces, nearly, and not 1000 oz. as often said to do. The volume of every pump, pipe, tank, reservoir, or warehouse floor, expressed in cubical *measure, will also give the* measure in gallons, bushels, lbs., &c.

NOMENCLATURE.

Measures of Length.

10 Teks	1 Fil.	10 Rods	1 Chane.
10 Fils	1 Aet.	10 Chanes	1 Kord.
10 Aets	1 Enk.	10 Kords	1 Leeg.
10 Enks.	1 Ped.	10 Leegs	1 Voy.
10 Peds.	1 Rod.		

1 Aet — 1.0 eighth of an inch.
1 Ped — 100.0 eighths of an inch, or 12½ inches.
1 Leg — 1.973 Mile nearly.

Measures of Surface.

10 Cheks	1 Prode.	10 Aers	1 Rood.
10 Prodes	1 Tave.	10 Roods	1 Morg.
10 Taves	1 Lit.	10 Morgs	1 Kide.
10 Lits	1 Slade.	10 Kides	1 Brale.
10 Slades	1 Aer.		

1 Chek — 1 Square Enk — 1.5625 square inch.
1 Rood — 0.9964 Rood old.

Measures of Capacity.

10 Goots	1 Crist.	10 Galons	1 Ferken.
10 Crists	1 Rame.	10 Ferkens	1 Ponchen.
10 Rames	1 Flone.	10 Ponchens	1 Last.
10 Flones	1 Horn.	10 Lasts	1 Ploat.
10 Horns	1 Galon.		

The Goot is the cubic Aet.
The Galon — 0.7044 Gallon.
The Ferken — 0.8806 Bushel — A Cubic Ped.
The Ponchen — 1.1007 Quarter.

Measures of Weight.

10 Cules	1 Grane.	10 Libes	1 Clove.
10 Granes	1 Fave.	10 Cloves	1 Heke.
10 Faves	1 Drame.	10 Hekes	1 Taf.
10 Drames	1 Ounze.	10 Tafs	1 Stol.
10 Ounzes	1 Libe.		

The Grane is the weight of a Goot of water — 2.02799 grains.
The Ounze " Flone " — 1.12708 oz. Avoir.
The Heke " Ferken " — 70.44256 lbs. Avoir.

If the Ferken of water be made 40 Libes, the Heke will then be equal to 176 lbs. Avoir., and we shall have exactly 10 sovereigns to the ounze, and each sovereign will be a dram weight. The Mint price of gold will be £10 the oz., £1 the dr., 1 F. the Fv., 1 c. the gr., and 1 mil, the cule.

Measures of Work and Power.

10 Pedlibs	1 Rodlib.	10 Rostols	1 Chastol.
10 Rodlibs	1 Chalib.	10 Chastols	1 Kostol.
10 Chalibs	1 Korlib.	10 Kostols	1 Lestol.
10 Korlibs	1 Leelib.	10 Lestols	1 Vostol.
10 Leelibs	1 Rostol.		

The *Pedlib* of work = 0.7338 footpounds. The Rostol of work is a stol of pressure applied through a rod of space. A Rostol of power is a Rostol of work done in a minute of time, and is = 2.2236 H. P. of Bolton and Watt. The H. P. of Bolton and Watt = 44.9728 Korlibs.

Indicated power of H. M. S. *Conqueror* = 1.266 Lestols or 1266 Rostols.

PREFIXES TO BE USED WITH THE VICTORIAN MEASURES AND WEIGHTS.

Measures of Length.

10 Milliteks...........	1 Centitek.	10 Voys...........	1 Decavoy.
10 Centiteks...........	1 Decitek.	10 Decavoys.......	1 Hectovoy.
10 Deciteks...........	1 Tek.	10 Hectovoys.....	1 Kelovoy.

Measures of Surface.

10 Millicheks..........	1 Centichek.	10 Brales..........	1 Decabrale.
10 Centicheks..........	1 Decichek.	10 Decabrales.....	1 Hectobrale.
10 Decicheks...........	1 Chek.	10 Hectobrales.....	1 Kilobrale.

Measures of Capacity.

10 Milligoots...........	1 Centigoot.	10 Ploats..........	1 Decaploat.
10 Centigoots...........	1 Decigoot.	10 Decaploats.....	1 Hectoploat.
10 Decigoots...........	1 Goot.	10 Hectoploats.....	1 Kiloploat.

Measures of Weight.

10 Millicules...........	1 Centicule.	10 Stols...........	1 Decastol.
10 Centicules...........	1 Decicule.	10 Decastols.......	1 Hectostol.
10 Decicules...........	1 Cule.	10 Hectostols......	1 Kilostol.

Measurement for Astronomers.

10 Millirads...........	1 Centirad.	10 Rads...........	1 Decarad.
10 Centirads...........	1 Decirad.	10 Decarads.......	1 Hectorad.
10 Decirads...........	1 Rad.	10 Hectorads......	1 Kilorad.

1 Rad — the earth's radius — 200.5283 Voys.
1 Centirad — 2.005 Voys.

These prefixes are only used for scientific uses.

THE DEPTH OF THE OCEAN.

THE United States steamer Arctic arrived at the Brooklyn Navy Yard, from her expedition across the Atlantic, on the 13th Oct. She sounded the Atlantic all the way across, finding the greatest depth 2070 fathoms (more than two miles). The bed of the ocean, in the section traversed by the Arctic, is a plateau, as already announced by Captain Berryman, who had twice before sounded across the Atlantic. The bottom in the deeper part is a very fine mud of mouse-gray color, so soft that the sounding instruments frequently sank several feet into the mud. Specimens of the bottom at every sounding, were brought up in quills, which were attached to the end of the sounding instrument, as shown in Vol. 4, No. 3, U. S. NAUTICAL MAGAZINE AND NAVAL JOURNAL. Towards the shore, on each side, this mud changes into a fine green ooze. No other substances were met with, no rock, nor anything that might prove fatal to a telegraph wire. The whole distance across was found to be 1640 miles from St. John, N. F., to Valentia Harbor, Ireland. The greatest depth was found nearly in the centre between these two places. The profile of the Atlantic bed, on this route, is of by far easier grade than many of our railroad profiles.

SCHOONER NAHUM STETSON.

Having been intimately connected with the construction of this vessel, we have not before spoken of her, although built in 1855, preferring that she should earn a reputation before introducing her. Through the enterprise of the owner of this fine vessel, Edgar Sprague, Esq., of this city, the world has been put in possession of such data for coasting and sea-going vessels generally, as we trust will redound to the lasting benefit of ship-builders and nautical men. The *Nahum Stetson* was built by Mr. Thos. Erskine, and although this was the first vessel of his construction, he dared to strike out a new course, and take counsel in so important an enterprise. The wisdom of his course will be made manifest in his future constructive history. While on the stocks it was clearly manifest that the nautical fraternity were taken aback—*the shrug of the shoulders and the shake of the head but too clearly evinced an innovation in the usages of the days of yore.* The savans of the sea had no hesitation in announcing that she would be neither fast or burdensome. This withering report was well calculated to shatter the confidence of her owner, whose unbending energy marked out an independent course, hurling defiance at precedent and prejudice, and thwarting the effects of this mischievous report by a trial of the vessel, placing her in charge of a pilot of the first water, the result of which was abundantly satisfactory. On account of her superior qualities she was subsequently chartered to search for the steamer *Pacific* within defined latitudes, from whence she proceeded to the Mediterranean, and has just returned.

A letter from her owner will furnish a better exposition of her qualities than any we could present.

Wednesday, Oct. 28, 1856.

Messrs. Griffiths & Bates:—Gents: I enclose you the letter of Capt. Perry referred to. The schooner's registered tonnage is 176 tons—will carry 210 tons of iron. She cost $15,000—sails faster than anything she ever was in company with—perfectly dry—never ships a sea. A barrel of flour stood under her cabin stairs without lashing, in a voyage from New-York to Buenos Ayres and back, without any sign of its having moved from its original position. To sum up, she is the *ne plus ultra* of schooners. You are fully warranted in saying every thing *good* of her appertaining to any vessel.

Truly yours,

Edgar Sprague.

An extract from the letter of Capt. Perry referred to, dated Malaga, Sept. 10th, 1856, reads as follows: "The *Stetson* is quite an astonishment among the ship-masters, how she can be so burdensome, so sharp, and sail so well." We furnish her lines. The log of her late cruise came to hand too late to be furnished in connection with these remarks. We find her accredited with fourteen knots on several occasions.

SHIP-BUILDING, NORTH AND SOUTH.

ON the lakes, ship-building is not brisk. The scarcity of money and the low rates of freight prevailing in the spring and summer of the present season, almost entirely checked speculative operations in the ship-yard. Present appearances indicate a return to a moderate degree of activity in the business. The builders on Lake Erie are now making contracts for the winter, and are asking an advance upon the price per ton, in order to build vessels entitled to class A 1 under the new rules of the Lake Association of Underwriters.

At Chicago, where few vessels are built, but where repairing is done very extensively, increased facilities are being provided for docking. Up the North Branch, G. S. Weeks has constructed a new dry-dock, which will be in operation the next season; and Messrs. Jordon & Olcutt, on the South Branch, intend making an extensive enlargement of their dry-dock, now in use, during the coming winter. The merchants of Chicago have their vessels built mainly on Lake Erie. At Detroit, J. P. Clark is completing two new dry-docks two miles below the city. The large one, which was opened in April, 1856, is 368 feet long, 68 feet wide, and 11½ feet deep. The water is discharged by a wheel about twenty feet diameter moved by steam power. We may speak of the manner of constructing these docks at another time.

At Cleveland, Messrs. Quayle & Martin, Peck & Masters, and the other builders, have orders, and they are now laying down several first class vessels and propellers, some of which we shall show our readers in future numbers of the Magazine. At Buffalo, Messrs. Bidwell & Banta have two steamers on the stocks, one for the engines of the late steamer *Garden City*, and a large boat to take the place of the steamer *Northern Indiana*, burned on Lake Erie the past summer. This firm built the steamer *Western Metropolis*, the fastest and finest now on the lakes; she has run only a part of this season, having come out late in the summer. We shall describe her in a future number. Mr. Banta stands deservedly high as a modeller in the West. We have been promised the lines and particulars of several fine vessels built in Buffalo, which we shall be happy to receive, whether the builders and owners read the Magazine or not. It affords us pleasure, however, to find in our travels through the country that our patrons are foremost among those who excel in their pursuits. There is nothing like *spirit* in conducting enterprises of every kind.

The ship-yards of the South, like those of New-York, are not over stocked with work. In Philadelphia, Hillman & Streaker are building a tug propeller, 60 feet on deck, 14½ × 6 feet deep, for sale. Birely & Lynn, a tug propeller, 70 feet on deck, 14½ × 6 feet deep. Messrs. Cramps have a vessel for the coal trade on the stocks. Mr. James House has also a vessel for the

coal trade on the stocks. Messrs. Vaughan & Fisher have duplicate schooners on the stocks, designed for the coal trade between Philadelphia and Boston. Capt. English is to command one, and Capt. Bateman the other. They are 290 tons, 118 on deck, $29\frac{1}{2} \times 9\frac{1}{4}$ hold. In the Navy Yard they have had the iron steamer *Walker* on the dock undergoing repairs, just off. The *Minnesota* lies here to be finished during the winter—has been on the dock for coppering—engine and boilers are ready for steam, and appear to be in good order—lower masts are in. Frigate *Saranac* is now on the dock for a thorough overhauling—her three copper boilers taken out to be repaired have been condemned, and are to be replaced by iron ones—Martin's probably. Mr. Grice, the Naval Constructor, is building a light-boat for the Treasury Department, of about 150 tons. There are 470 men employed. The facilities are here for large operations, and timber is being received for one of the frames of the contemplated steam sloops-of-war. The yard is being improved, and an enlargement is contemplated by adding about 200 feet to its lower side. This will be a wholesome and much needed improvement.

In Baltimore, the exhibition of the Maryland Institute has been of less interest than usual. We are not, however, advised of the cause. In the nautical department there are some attractions, but the profuse whitlings of childish fancy very much deteriorate the value of this department in all our Sea Board exhibitions—the toy models being made to no definite scale or draught, and without reference to utility. The ship-builders of Baltimore pride themselves on their models, and have a disposition to exhibit the models of the vessels they are building. This would be a positive advantage both to them and to the Institute. They have some diffidence at being classed with those crude efforts.

This is the most important department of any of the great sea-coast exhibitions, and very generally the least cared for. It stands connected with a far greater line of interests than any other industrial and mechanical art, and at the same time there are proportionately fewer men competent to act as judges, than in any other branch of human industrial science. There is about the same, or nearly the same necessity for a board of judges to admit as to award in this department, and when properly attended to in our Institutional Exhibitions, we shall see our ship-builders coming up to a laudable emulation in the determination of an elementary shape. Let us remember that ship-building is yet an infantile science. There remains much more to be done than has been yet accomplished. The only large model at the exhibition, is that of Nathaniel McKay, of East Boston. This model is that of a ship with scale of displacement, fair clipper model, if we except the drooping sheer forward, and the heavy overhanging stern. Messrs. Rutter & Mead have the model of a schooner they are now building on exhibition, 230 tons, model of yacht *Hiawatha*—indicates no improvement in that direction. By way of life saving, Thompson has a good supply of his life, preserving seats, a good article for the object designed.

Ship-building in Baltimore is quite as brisk as elsewhere. J. P. Fardy & Co. are building two surveying centre board schooners of 75 tons, 67 feet long, 20 feet by 5½ hold, to draw in ballast 4½ feet, for the Treasury Department, to operate in the waters of Florida—about to lay a keel of a brig, 250 tons, for West India trade.

Moses Saunders, Esq., is building a schooner 56 feet on deck, 18½ beam, 6 feet hold, to draw seven feet water, on their own account.

Samuel Skinner & Sons are building a brigantine, 260 tons, 105 feet on deck, 26½ beam, 10½ feet hold, for general freighting, for Spencer & Reed.

Wm. Skinner & Son, brigantine, 107 feet on deck, 27 feet beam, 9 feet 10 inches hold, general freighting, for James Pendegrast, Esq.; also a schooner of 110 tons, 80 feet on deck, 21½ beam, 7 feet hold, for Colony of Liberia, to trade on coast of Africa.

Messrs. Sanks & Riggin are building a brig of 250 tons, 105 feet on deck, 26 beam, 9 feet 10 inches hold, on their own account, for West India trade, —about building a duplicate.

By Mr. Thomas Hooper, a barque or brig, 280 tons, 120 feet on deck, 24½ beam, 10½ hold, for Rio trade, on their own account.

John A. Robb, Esq., brig *Monticello*, 250 tons, 110 feet on deck, 26 wide, 11 feet deep, South American trade, for Spencer & Reed.

By Thomas Booz & Bro., ship *Washington Booth*, 154 feet on deck, 35 feet beam, 20 feet hold, for Pacific trade, for Fitzgerald, Booth & Co.

Wm. Wagner, Esq., has laid the keel for a herm brig, 240 tons, 110 feet between perpendiculars, 22 feet beam, 10 feet hold, for fruit trade.

By Messrs. Wm. & Geo. Gardner, barque of 600 tons, for Capt. Sandford, 140 feet on deck, 29 beam, 15 feet 9 in. hold, general freighter; have had a ship two-thirds in frame for several months, three decker, 2,000 tons, for Hancock & Co., Baltimore, 220 feet on deck, 42 feet beam, 27 hold, general freighter.

By Cooper & Butler, ship *Casilda*, for B. M. Hodges, Jr., 950 tons, 161 on deck, 36 beam, 22 hold, general freighter; also steamboat *Hiawatha*, for Powhattan Steam Boat Co., Baltimore and Richmond line, 1000 tons, 230 on deck, 36 beam, 14 feet hold, to have one overhead beam, engine by Murray & Haglehurst, Baltimore; also about putting up a ship of 1,100 tons, for general freighting.

By Muller & Bro., schooner, 55 tons, 60 feet on deck, 18 feet beam, 6 feet hold, for Chesapeake Bay trade, grain and oysters, capacity 2,000 bushels of grain; also intend building a 90 ton schooner for general freighting.

By Goodwin & Stevens, on their own account, for Bay trade, schooner, 80 feet long on deck, 24 feet beam, 6 feet hold, 98 tons; also a schooner, 90 tons, for palm oil trade on coast of Africa, 74 feet deck, 23 feet beam, 6½ hold.

By Ashcroft & Abrams, a ship for Colonization Society, nearly ready for launching, with other vessels, the account of which has not been received.

NOTICES TO MARINERS.

DESCRIPTIVE LIST of the Day-marks along the Florida reefs from Cape Florida to Sand Key Light-house, arranged in the regular order in which they are passed in going to southward and westward, erected in conformity to the act of Congress making appropriations for Light-houses, Light-boats, Buoys, &c., approved March 3, 1853.

The following day-marks along the Florida reefs, from Cape Florida to Sand Key light-house, occupy the positions of the Coast Survey signals used in making surveys on that coast. They are each composed of an iron shaft thirty-six feet high, erected upon iron screw foundations, distinguished by a vane, upon which one of the letters of the alphabet is painted, and above it a lattice-work hoop-iron cylinder or barrel.

Three colors (white, black, and red) are used in painting each signal to render them as striking to the eye of the mariner as possible. and are so combined that no two adjacent day-marks have the same colors upon like parts.

Masters of vessels may ascertain their latitude or longitude with tolerable certainty by examining closely the colors of the beacons as they are approached, and if the letter painted on the vane is distinguished, there can be no mistake in determining their positions.

These day-marks are placed on the most projecting and dangerous points of the Florida reef, and are in general from four to six miles from the outside (seaward) shores of the Florida Keys, and within half a mile, in every case, of the edge of the gulf stream.

The depth of water where these signals stand does not exceed four feet at low tide, in any case, and just outside of them to the eastward, in the gulf stream, it is of unknown depths.

These day-marks may be approached from seaward within a few hundred yards, but it would always be prudent, and particularly with very light winds or in bad weather, to give them a good berth.

In moderate weather it often happens, especially after easterly gales, that the force and direction of the gulf stream sets across the reefs, and then vessels are imperceptibly carried amid its dangers, although the course steered should, if made good, carry them outside of all danger.

When the master of a vessel finds one of these beacons to the eastward of him, he may be sure that he is between the reefs and the keys, and consequently surrounded by shoals and dangerous rocks.

Cape Florida Light-house—Tower White—On south point of Key Biscayne, off the south-east point of Florida. Lat 25d. 39m. 56s. N. Lon. 80d. 09m. 29s. W.

Power Rock Beacon.—Letter P, painted red, on the vane; hoop-iron lattice-work cylinder, white; shaft and vane, black. Bears from Cape Florida light-house, S., 35d. 41m. 55s. E. (true); distant 5½ nautical miles. Bears from Soldier Key, S., 89d. 58m. 16s. E. (true); distant 3½ nautical miles. Lat. 25d. 35m. 23s. N. Lon. 80d. 05m. 51s. W.

Triumph Reef Beacon.—Letter O, painted black, on the vane; hoop-iron lattice-work cylinder, red; shaft and vane, white. Bears from Elliott's Key, No 1, S., 82d. 30m. 26s. E. (true); distant 3½ nautical miles. Bears from Soldier Key, S., 31d. 04m. 14s. E. (true); distant 7½ nautical miles. Lat. 25d. 28m. 37s. N. Lon. 80d. 06m. 50s. W.

Long Reef Beacon—Letter N, painted white, on the vane; hoop-iron lattice-work cylinder, black; shaft and vane, red. Bears from Elliott's Key, No. 1, S., 52d. 15m. 21s. E. (true); distant 3½ nautical miles. Bears from Soldier Key, S., 13d. 53m. 51s. E. (true); distant 8, 8-10 nautical miles. Lat. 25d. 26m. 45s. N. Lon. 80d. 07m. 21s. W.

Ajax Reef Beacon.—Letter M, painted red, on the vane; hoop-iron lattice-work cylinder, white; shaft and vane, black. Bears from Elliott's Key, No. 2, S., 79d. 35m. 43s. E. (true); distant 3, 9-10 nautical miles. Bears from Elliott's Key, No. 1, S., 26d. 06m. 05s. E. (true); distant 5, 4-10 nautical miles. Lat. 25d. 24m. 09s. N. Lon. 80d. 07m. 59s. W.

Pacific Reef Beacon.—Letter L, painted black, on the vane; hoop-iron lattice-work cylinder, red; shaft and vane, white. Bears from Old Rhodes Key, S, 76d. 29m. 51s. E. (true); distant 5½ nautical miles. Bears from Elliott's Key, No. 1, S., 15d. 48m. 15s. E. (true); distant 5, 4-10 nautical miles. Lat. 25d. 22m. 30s. N. Lon. 80d. 08m. 30s. W.

Turtle Reef Beacon.—Letter K, painted white, on the vane; hoop-iron lattice-work, black; shaft and vane, red. Bears from Old Rhodes Key, S., 22d. 20m. 47s. E. (true); distant 4, 4-10 nautical; miles. Bears from Cæsar's creek bank, S., 6d. 28m. 07s. W. (true); distant 6, 1-10 nautical miles. Lat. 25d. 16m. 52s. N. Lon. 80d. 12m. 24s. W.

Carysfort Reef Light-house.—An iron pile light-house tower and keeper's quarter, dark color. On Carysfort reef, near the edge of the gulf stream, and to the eastward of Key Largo. Lat. 25d. 13m. 15s. N. Lon. 80d. 12m. 44s. W.

The Elbow Beacon—(Building.)—Letter I, painted red, on the vane; hoop-iron lattice-work cylinder, white; shaft and vane, black. Bears from Grecian Shoals beacon, N., 60d. 45m. 40s. E. (true); distant 2, 4-10 nautical miles. Bears from Carysfort Reef light-house, S, 29d. 29m. 35s. W. (true); distant 5, 4-10 nautical miles. Lat. 25d. 08m. 32s. N. Lon. 80d. 15m. 40s. W.

Grecian Shoals Beacon.—Letter H, on vane, painted black; hoop-iron lattice-work cylinder, red; shaft and vane, white. Bears from Sound Point, S., 45d. 58m. 23s. E. (true); distant 5, 3-10 nautical miles. Lat. 25d. 07m. 22s, N. Lon. 80d. 17m. 57s. W.

French Reef Beacon.—Letter G, painted on vane, white; hoop-iron lattice-work cylinder, black; shaft and vane, red. Bears from Lower Sound Point, S., 32d. 33m. 53s. E. (true); distant 5 nautical miles. Bears from Point Willie, S., 10d. 30m. 07s. E. (true); distant 6, 2-10 nautical miles. Lat. 25d. 02m. 06s. N. Lon. 80d. 21m. 05s. W.

Pickles Reef Beacon.—Letter F, painted on vane, red; hoop-iron lattice-work cylinder, white; shaft and vane, black. Bears from Point Charles, S., 16d. 57m. 43s. E. (true); distant 5 4-10 nautical miles. Bears from Lower Sound Point, S., 6d. 34m. 30s. W. (true); distant about 7 nautical miles. Lat. 24d. 59m. 22s. N. Lon 80d. 24m. 55s. W.

Conch Reef Beacon.—Letter E, painted on vane, black; hoop-iron lattice-work cylinder, red; shaft and vane, white. Bears from Rodriguez Bank, S., 43d. 30m. E. (by compass.) Bears from Key Tavenier, S., 43d. 30m. E. (by compass.) Lat. 24d. 56m 36s. N. Lon. 80d. 27m. 50s. W.

Crocker's Reef Beacon.—Letter D, painted on vane, white; hoop-iron lattice-work cylinder, black; shaft and vane, red. Bears from Snake Creek Point, S., 39d. 15m. E. (by compass); distant between 4 and 5 miles. Lat 24d. 54m. 21s. N. Lon. 80d. 31m. 26s. W.

Alligator Reef Beacon.—Letter C, painted on vane, red; hoop-iron lattice-work cylinder, white; shaft and vane, black. Bears from Indian Key, S., 66d. 30m. E. (by compass); distant about 5 miles. Lat. 24d. 49m. 08s. N. Lon. 80d. 38m. 08s. W.

Coffin's Patches Light-House.—(Building.)—An iron pile structure is now being erected at Coffin's Patches, near the outer edge of the reef, and about south from Duck Key.

American Shoals Beacon.—Letter B, painted on vane, black; hoop-iron lattice-work cylinder, red; shaft and vane, white. Bears from Loggerhead Key, S., 22d. 16m. 35s. W. (true); distant 5, 9-10 nautical miles. Bears from Eastern Sambo beacon, N., 76d. 38m. 50s. E. (true); distant 8, 1-10 nautical miles. Lat. 24d. 31m. 24s. N. Lon. 81d. 31m. 16s. W.

Eastern Sambo Beacon.—Letter A, painted on vane, white; hoop-iron lattice-work cylinder, black; shaft and vane, red. Bears from Geiger's houses, S., 3d. 29m. 24s E. (true); distant about 4½ nautical miles. Bears from South Saddle Hills, S., 13d. 13m. 01s. W. (true); distant 5 nautical miles. Lat. 24d. 29m. 32s. N. Lon. 81d. 39m. 55s. W.

Sand Key Light-house.—An iron pile structure 121 feet high, painted a dark color, surmounted by a lantern painted white.

This light-house is 7½ nautical miles, in a southerly direction, from the Key West Light-house. Lat. 24d. 27m. 09s. .5 N. Lon. 81d. 52m. 43s. .5 W.

The foregoing beacons were erected under the superintendence of Lieutenant James Totten, U. S. Army, Assistant U. S. Coast Survey. The geographical positions of these beacons, and their bearings and distances from the adjacent object, were furnished by the Superintendent of the Coast Survey.

By order of the Light-house Board.

Light-house at Edgemoggin Reach, Maine.—A light-house will be erected during the present season on Fly's or Green Island, near the eastern end of Edgemoggin Reach. It is intended as a guide to vessels running to and from Ellsworth, Blue Hill, and Mt. Desert, and on the Light-house List of 1856 will come next after No. 11, (Bear Island Light-house.)

The tower will be of brick, painted white, and will be attached to the keeper's house, which will be of wood, and painted brown. The lantern will be painted black. The illuminating apparatus will be a fifth order Fresnel lens, showing a fixed white light. The height of the centre of the light above the level of the sea, will be 25 feet, and the light will be visible in good weather from the deck of an ordinary vessel about seven nautical miles. The light will be lighted for the first time on the night of February 2d, 1857, and will be kept burning during every night thereafter.

By order of the Light-house Board,
Portland, September 12th, 1856.

Lighting of the Turkish Coast.—A letter from Constantinople says:—The Ottoman government, on the proposition of the directors and inspectors appointed to examine the question, has decided on giving considerable extension to the lighting of the coast. The line of light-houses to be constructed will start from Cape Sigri, which forms the westernmost point of the Island of Mytelene, (the ancient Lesbos,) and extend to Capes Kara Bouroun and Kili, in the Black Sea. A light-house of the first rank will be placed on each of the three above named points. We hope to be able to announce very shortly the lighting of the new houses of Gallipoli, as well as at Cape Hellespont and the Pont of the Chateau of Koum Kalc, which form the entrance of the Dardanelles from the Archipelago. The following is the list of the light-houses and port lights established since the 5th of May, last:—Point of Sener Bakchi, fixed white light; [illegible] melia, at the entrance of the Bosphorus, fixed white light; light-house of Ana[illegible] of the Bosphorus, fixed white light, but with flashes at intervals; Gallipoli tem[illegible] is to be replaced by a new revolving light of the second class; Isle of Serpents, [illegible] which is to be replaced by a revolving light of the second class; Dardanelles, [illegible] which will be replaced by two red lights placed perpendicularly one over the [illegible] pont, at the entrance of the Dardanelles, flash light every minute.

Bell Buoy on Deep Hole Rock, off Cotuit, Vineyard Sound, Mass.—The Spar Buoy (red and black horizontal stripes,) has been removed from this station, and in its stead a can buoy of the second class (red and black horizontal stripes), with a bell weighing 150 pounds, secured on top in an iron frame, surmounted by a hoop iron day-mark, has been placed near this rock.

The bell is elevated 4½ feet above the water; it is tolled by the action of the waves, wind, and tide, and can be heard in ordinary weather about half a mile.

The day-mark is one foot four inches in diameter, and is elevated seven feet above the water.

By order of the Light-house Board.

Boston, September 9, 1856.

A black Nun Buoy of the third class, numbered 9, has been placed on the north end of Nix's Mate, Boston Harbor, in 15 feet water at low tide. The following magnetic bearings are given:

Narrows Light, S. E. ½ E. Long Island Head Light, W. ½ S. Deer Island Beacon, N. W. ½ N.

A red Nun Buoy of the third class, numbered 10, has been placed on Seventy-four Bar, Narrows, Boston Harbor, in 15 feet at low tide, about 20 fathoms west of the old wreck, which has but 9 feet of water on it at low tide. The following magnetic bearings are given:

Nix's Mate Beacon, W. ¾ N. Nix's Mate Buoy, N. W. by W. ¾ W. Deer Island Point Beacon, N. W.

Fog Bell at Point Bonita, North Head, San Francisco Bay, California.—Notice is hereby given that a Fog-Bell of 1500 pounds has been placed on the bluff just in front of the Light-House Tower, at Point Bonita. The bell, with the machinery, is in a frame building, open in front on a level with the ground, and will be struck during foggy and thick weather, six blows at intervals of 16 seconds each, followed by a pause of 44 seconds. The bell is elevated 270 feet above the sea. The firing of the Fog-Gun will be continued, as usual, until further notice.

By order of the Light House Board,

Office 12th Light House District, San Francisco, Cal., Aug. 6, 1856.

Cape of Good Hope.—The following instructions to mariners are of importance to the shipping interest, and cannot be too widely circulated:

Cape Receife.—No vessel should approach the cape four miles to the westward of Cape Receife, or Receife itself, nearer than two miles, and then only with a commanding breeze or in a steamer, as the reefs extend nearly a mile and a half from the shore, and because there is a very decided and dangerous indraught towards them. When the height of the light-house subtends an angle of 23′ the distance from it will be two miles and a half—therefore no greater angle should be got. Neither should any one be tempted, by the absence of break, nearer the East side of the Receife Light-house, as it often occurs that it does not break upon a seven foot patch a mile from the light-house, and yet it will, without previous warning, break in seven, and even ten fathoms. It is seldom prudent to get less than thirteen fathoms water while still outside of Receife. Latitude of light-house, 34° 1′ S.; longitude, East of Greenwich, 25° 40′ 7″; longitude, East of Cape Observatory, 0° 20′ 46″. The lighthouse will show alternate horizontal bands of white and red, two of each. The light is fixed, with brilliant flashes at intervals of a minute.

Bird Islands.—A wooden light-house has been erected on the eastern extreme of the Bird Islands in Algoa Bay, showing two white lights, eighteen feet apart, from sunset every evening till sunrise on each following morning. Latitude of the easternmost island, 33° 52′ S.; longitude, East of Greenwich, 26° 18′ 30″.

St. Croix Islands.—In Algoa Bay, and at about ten miles N. E. b. E. from the anchorage of Port Elizabeth, are the St. Croix Islands, under which there is a good anchorage for all winds. Latitude of the large island, 33° 47′ 30″ S.; longitude, East of Greenwich, 25° 47′.

Entering Algoa Bay at Night.—In coming from the westward no vessel should make the light on a bearing to the southward of East; and should she from any cause have fallen to the northward, and thus brought the light to the southward, she must, without fail, before she arrives within five miles of the light, haul out till the light bears East, or if in doubt about the amount of deviation of her compass, to E. ½ N.; after which she may steer E. S. E, till the light bears N b. W; then E. N. E., till it bears N. W.; after which she may alter course to N. N. E. Until light is brought on the latter bearing, viz. N. W., she should not get less than twelve fathoms water, and she should go sufficiently slow to obtain soundings.

Signals.—Attention should at once be paid to the following signals when made from the Port Office:—Union Jack over white pierced blue, "Veer to a whole cable." Union Jack over blue; white, blue, horizontal, "Strike lower yards and topmasts and rig in jibbooms." In stormy weather vessels can make known their wants to their agents through the Port Office by Maryatt's code of signals, and such as do not possess the code can make the following requests with their ensigns:—Ensign in the foretopmast rigging, "I am in want of an anchor." Ensign in the fore rigging, "I have parted a bower cable." Ensign in the main rigging, "I am in want of an anchor and cable." Whift, where best seen, "Send off a boat." Whenever a red flag may be hoisted at the Port Office, it denotes that it is unsafe for any boat to land. Eastern Province (Cape) Herald.

PORT OF LIVERPOOL.—*Northern Channels.—Crosby Lighthouse.*—A light will be exhibited at Crosby Light-house at sunset on Monday, the 6th of October, 1856, and be continued every night from sunset to sunrise. The light will be stationary, of a red color, elevated 96 feet above the level of the sea at half-tide, and be visible between the bearings of S. S. E. ¼ E. and East, which limits will indicate respectively when a ship is westward of Formby Spit or to the Southward of the Crosby Light-ship.

Formby Old Light-house.—The light in this tower will be discontinued on the evening of the above date.

Formby Light-ship will be moved from her present berth, S.E. b. S. ¼ S., half-a-mile, into 33 feet at low water. Crosby Light-house bearing E. b. S. ¾ S. southerly; N. W. mark N. E. b. E. ¼ E. Crosby Light-ship S. E., distance 1¾ mile.

Crosby Light-ship will be moved from her present berth N. b. W. ½ W., 330 fathoms, in 46 feet at low water. Crosby Light-house E. ½ S.; N. W. mark N. E. ¾ N.

The Bell Beacon will be moved from her present berth, North, 200 fathoms, into 25 feet at low water. N. W. light-ship S. W. ¼ W., distance 3⅝ miles; Formby Light-ship E. b. S. ¾ S. southerly 3¼ miles.

SAILING DIRECTIONS.—*Victoria Channel.*—A ship coming from seaward, by bringing the Formby Floating Light to bear E. b. S. ¾ S., southerly, will have that object, the Bell Beacon, and the Crosby Shore Light in one; and after passing the Bell Beacon, by keeping the lights in one, may steer on that bearing up the Victoria Channel until abreast of V. 3, black, or until Leasowe Light bears S. ¼ W. and Rock Light bears S. S. E. ½ E.; then haul up N. E. until the Crosby Light-ship opens eastward of the Formby Light-ship, when you will be in the fairway, and may steer for the Crosby Lightship. Should there be sufficient water, instead of hauling up as above, she may continue her course with the Formby Light-ship and Crosby Shore Light in one, and so pass in the best water (8 feet at low water, the same as in the Queen Channel), over the West Middle into the Crosby Channel. The navigation of this part of the channel by day will be facilitated by the placing of the Nun and Can Buoys, S. V. 1., by passing between which the shoal parts of the West Middle will be avoided.

Queen Channel.—Having sighted the Bell Beacon, a course from it N. E. b. E. ½ E. 1 mile, will bring you to the Fairway Buoy of the Queen Channel (black, with perch and ball,) from which Crosby Light-house bears S. E. b. E. ¼ E.; with this bearing for a course, steer till the Crosby Light-ship comes well open eastward of the Formby Ship, when you may shape your course for the Crosby Ship, observing to keep well to eastward of the Formby Ship, to give a wide berth to the shoal elbow of the West Middle.

Zebra Channel.—A course from the Bell Beacon N. E b. E. ½ E. 2¼ miles, brings you to the Zebra Fairway Buoy, from which a S. S. E. course will carry you in the deepest water through this channel to the Formby Ship. This channel is very narrow.

Observe.—That in sailing upon any of the bearings abovenamed, the set of the tide must be considered, and due allowance be made in the course steered.

BEAVER-TAIL LIGHT-HOUSE, ENTRANCE TO NEWPORT HARBOR, RHODE ISLAND.—A new light-house tower and keeper's dwelling have been constructed, to take the place of the old tower and house at Beaver-Tail, on the south end of Conanicut Island. The tower is of granite, (natural color,) and the house of brick, whitewashed, of two full stories in height, and joined to the tower by a one-story connecting room.

The new tower is 10 feet square, 49 feet from base to centre of light, and is located 100 feet to the north of the old tower. Its base is 33 feet above mean low water, making the light 82 feet above low tide level.

In ordinary weather the light should be seen from the deck of a vessel, 10 feet above the water, at a distance of 14 nautical miles.

The new illuminating apparatus will be of the 3d order of Fresnel, showing a *fixed white light* around the entire horizon. It will be exhibited on and after October 20, 1856, when the old light will be discontinued, and the old tower will be demolished.

By order of the Light-house Board.

Newport, R. I., September 20th, 1856.

CAPE RACE LIGHT, NEWFOUNDLAND.—The Lords of the Committee of Privy Council for Trade give notice that the light-house recently erected upon Cape Race, Newfoundland, will be lighted, and will continue to exhibit a fixed white light, from sunset to sunrise, on and after December 15th, 1856. The light will be visible to seaward, from N.E. by E. round by the S.E. and S. to W. The light is elevated 180 feet above the mean water level of the sea, and may be seen in clear weather 17 miles from a ship's deck. The tower is striped red and white vertically. It stands close to the old beacon, which has been cut down. The S.E. face of the light-house is striped red and white.

The light-house is in latitude 46° 39′ 12″ N., and in longitude 53° 2′ 38″ W. All bearings are magnetic. Variation 24°.

N. B.—A toll will be levied upon all vessels benefitting by this light.

Light-house on Cape Hancock, Mouth of Columbia River, Washington Territory.—*A Fixed White Light, 1st order of Fresnel, illuminating the entire horizon.*—The tower is whitewashed and placed on the pitch of the Cape, about 190 feet above the sea. The light is elevated about 230 feet above the sea level, and will be seen, in a favorable state of the atmosphere, from a height of 15 feet above the water, 22 nautical or 25 statute miles. The latitude and longitude and magnetic variation of the light, as given by the Coast Survey, are: latitude 46° 16′ 35″ N., longitude 124° 02′ W., magnetic variation, July 1851, 20° 45′ E. The light will be exhibited for the first time on the night of the 15th of October, 1856, and thereafter every night from sunset to sunrise, until further notice.

A Fog Bell—Of 1,600 pounds, has also been placed on the Bluff in advance of the Light Tower, which will be sounded during foggy or other thick weather, night and day, from the same date. The distinctive mode of striking the bell will be published hereafter. The machinery is in a frame building, on a level with the ground, with the front open to receive the bell, and is also whitewashed

By order of the Light-house Board,
Office 12th Light-house District,
San Francisco, Cal., September 15th, 1856.

Mediterranean—Lights of the Dardanelles at Cape Hellas and Gallipoli.—The following official information has been received at the office of the Light-house Board, and is published for the benefit of mariners:

"A telegraphic despatch, dated yesterday, has been received from Capt. Spratt, R. N., C. B., commanding H. M. surveying vessel *Medina* at Constantinople, stating that by order of Rear-Admiral Lord Lyons, G. C. B., &c., the following lights are permanently established in operation in the Dardanelles, viz:

1. A *revolving* light of the natural color, eclipsed once every minute, on Cape Hellas, forming the northern point of entrance from the Archipelago.
2. A *revolving* light of the natural color, eclipsed twice every minute, or once every half minute, on the west point of Gallipoli, in lieu of that on the east point of that cape.

Such further particulars, as soon as they are received, will be given hereafter concerning these lights, as may appear necessary for the information of mariners.

Hydrographic Office, Admiralty, London, September 4th, 1856.
By command of their Lordships, John Washington, *Hydrographer.*
Treasury Department,
Washington City, September 29th, 1856.

Savannah Range Light.—The Savannah Republican of the 29th ult., says:—We learn from a letter to his Honor the Mayor, from the Secretary of the Light-house Board, that instructions have been sent to Capt. J. F. Gilmer, U. S. Engineer, to take charge of the above work, and that it will be pushed forward to an early completion.

Savannah Bar.—The same paper of the 30th ult , reports progress made in excavating "The Knoll," at the mouth of the Savannah river, as follows:—We learn from the report of Lieut. Lee, Assistant Engineer, that the first cut through the Knoll at the mouth of Savannah river has been completed, and 6753 cubic yards of deposite removed. The channel is now open for the passage of vessels drawing 22 feet, at high tide, whereas, before the removal, a vessel drawing over 18 feet could not be admitted.

The work has recently been suspended for reasons stated in the report. The dredge boat was to have been finished, according to contract, on the 20th June last, but was not completed until the 15th August, when she was taken down and placed on the work. Since that time the weather has been most unfavorable for operations, and she has, in consequence, been able to make but one cut through the Knoll 40 feet wide, 14 feet deep, and about half a mile in length. The most favorable months for dredging at this exposed part of the river, are June, July, and August, when the winds are, for the most part, southerly. During the remainder of the year, the winds usually vary from East to West by way of North, making it too rough for the tug-boat to tow the loaded mud scows, and for the dredge boat to work without injury to herself.

We learn that the work was suspended on the 26th ult., and will be resumed early in May or June next. When completed the cut will be 300 feet in width, affording an ample passage for all the commerce of the city. The Engineer is of opinion that it can be readily finished during the next season.

Execution Rocks Light-house.—On or about the 1st November next, the red light at Execution Rocks Light-house, New-York, will be discontinued, and a fixed white light of the 4th order Fresnel system substituted for it.

The change will be made about the same time that the revolving light, of which notice has already been given, takes the place of the fixed light at Sands' Point Light-house, New-York.

By order of the Light-house Board.
New-York, October 18th, 1856.

Ocean Currents.—The following communication is a translation of a document forwarded by the Institute of France to Dr. C. T. Jackson, of Boston, with the request that it should be translated and published extensively throughout America and the West Indies:—

The Perpetual Secretary (M. De Beaumont) in his letter, remarks: "It is desirable that it should receive a large publicity throughout America and the West Indies. Since many of the floaters cast into the sea from the frigate Queen Hortense may drift along the coasts of Europe and Africa, even to the equatorial current, and from thence to the Antilles, and into the Gulf Stream, making several passages across the ocean, and as some of them may pass Bhering's Strait, it will be useful to have this communication re-published in San Francisco."

[Editors of newspapers in the cities of the Atlantic coast, and those on the Western side of this continent, are respectfully requested to have this communication copied into their columns.]

IMPERIAL INSTITUTE OF FRANCE, ACADEMY OF SCIENCES.

Extract from the Comtes rendus of the sessions of the Academy of Sciences, volume 40—session of September 8th, 1856:—

Physical Geography.—Experiments on the direction of the currents of the Northern Atlantic Ocean. (Letter of H. I. H. Prince Napoleon to M. Elie De Beaumont, Perpetual Secretary):—

On Board la Reine Hortense,
Berwick Roads, Shetland Isles, Aug. 20, 1856.

Monsieur le Secretaire Perpetuel—In the bays of the Northern coasts, at Spitzbergen, Iceland, and Greenland, is found much floating wood, which, after having wandered a long time in the sea, impelled by currents, is at length thrown on shore.

These woods are mostly of the pine tribe, but nothing certain indicates their origin.

I have wished that my voyages in the Northern seas should contribute to our further knowledge of these currents, which have been studied already in their principal directions, but whose ramifications are little known, and I have caused to be thrown from the frigate La Reine Hortense, in her different voyages, a large number of floaters, (fifty,) bearing the record of her points of departure.

These floaters are made of cylinders of pine wood, twenty-five centimetres (about ten inches) in diameter, and of the same length.

In the direction of the axes of the cylinders are pierced holes, destined to receive small phials, sealed with wax, enclosing notes of this kind:—

"Voyage of H. I. H. Prince Napoleon, on board the frigate Queen Hortense, commanded by M. de la Ronciere, captain of the ship.

Note cast into the sea.................................... 1856
Latitude .... —
Longitude from Paris meridian........................... —

"Those who find this billet are requested to send it to the nearest French Consul."

This billet is translated into English, Latin, and Russian.

The phials are cemented into the wooden cylinders by means of pitch, which entirely envelopes them, and over them are nailed sheets of lead, bearing the name La Reine Hortense, and the date of their being cast overboard; and to attract attention to these floaters, and to prevent their being confounded with other floating wood, there have been pierced through the cylinders two holes, at right angles, into which strong pegs are driven, which project about two decimetres, and form a cross.

I shall be very thankful to you if you will have the goodness to write to various scientific bodies in Europe and America, to make these facts known to them and to give them publicity and to request them to inform the Academy of Sciences of France of the places where these floaters are found.

Receive, Mr. Perpetual Secretary, the expression of my distinguished consideration.

Napoleon.

The Apalachicola Commercial Advertiser of September 6th, says:—We have been furnished with the following items by A. Cordsden, Esq., Pilot:

The following is a report of buoys and stakes at the West Pass Bar and Channel way up to Apalachicola:—East bar buoy gone. West bar buoy gone. East bank buoy drifted on Flag Island. Oyster bar stake gone. Higgins flat stake gone. Stake at entrance of strait channel gone. Wreck stake gone.

At the East Pass entrance, Bar buoy drifted about one and a half miles to Eastward. West bank buoy about the same place. Middle ground buoy in right place. Sand Island buoy on spit gone. Lower stake at the Gap gone.

Bars and Inlets.—Depth of water on the Bars and Inlets of Cape Fear, as reported by Class No. 7, September 2d:

New Inlet Bar, 9 feet; New Inlet Rip, 7½ feet; Main Bar, 4 feet; Slue, 5½ feet; Western Bar, 8½ feet; Western Rip, 8 feet.

Measure taken at low water—add five feet, and you have the depth at high water.

Horse-Shoe Reef Light-house, Entrance to Niagara River, New-York.—This light will be shown on Monday, September 1st, at sunset.

A fixed white light will be seen for the space of one minute and fifteen seconds, after which a brilliant flash of light of about five seconds' duration will be seen; an obscuration of about fifteen seconds will follow, then the fixed white light will again be seen for one minute and fifteen seconds, and as before. The light is forty feet above the present stage of water of the Lake, and will be seen in ordinary states of the weather ten miles. Buffalo Light-house bears east by south, and is distant one mile and a quarter.

In entering Niagara River leave the light on the Horse-Shoe Reef four hundred yards on the starboard, then bear direct to the Black Rock beacon north-east by north, half north, (N.E. by N. ½ N.) distance two and a quarter miles.

The temporary range light on Albany street, at Black Rock, below the Black Rock beacon, will be thenceforth discontinued.

By order of the Light-house Board.

A light-house has been erected on Grass Island, at the northern (or Mensha) outlet of Lake Winnebago, and the light will be exhibited for the first time on the evening of the 5th of September, 1856, and every day thereafter, from sunset to sunrise, until the close of navigation.

By order of the Light-house Board.

Bell Buoy on Deep Hole Rock, off Cotuit, Vineyard Sound, Mass.—The Spar Buoy (red and black horizontal stripes) has been removed from this station, and in its stead, a Can Buoy of the second class (red and black horizontal stripes), with a bell weighing 150 pounds, secured on top in an iron frame, surmounted by a hoop iron day mark, has been placed near this rock.

The bell is elevated 4½ feet above the water; it is tolled by the action of the waves, wind and tide, and can be heard in ordinary weather about half a mile.

The day mark is one foot four inches in diameter, and is elevated — feet above the water.

Light-house at Absecum, New Jersey.—Notice is hereby given that a new tower and keeper's dwelling at Absecum, N. J., are now nearly completed, and that on or about the 15th day of January, 1858, a fixed white light of the first order will be exhibited therefrom.

The tower is of brick, unpainted, and will be surmounted by an iron lantern painted black.

The focal plane will have an elevation of 187 feet above mean tide, and the light should be seen under favorable circumstances from the deck of an ordinary sailing vessel, at a distance of about 20 nautical miles.

The approximate position of this light, as deduced from the Coast Survey charts, is—latitude 39° 42′ north, longitude 74° 25′ west of Greenwich.

Due public notice will be given of the precise date when the light will be first exhibited.

By order of the Light-house Board.

Philadelphia, September 3d, 1856.

Princes' Channel, Entrance to the Thames—Additional Light.—Notice is hereby given that, pursuant to the intention expressed in the advertisement from this House, dated 5th June last, a Light-vessel having the words "Princes' Channel" painted on her sides, has been moored on the North side of this Channel, in 3½ fathoms low water spring tides, with the following marks and compass bearings, viz:—Monkton Beacon, nearly midway between St. Nicholas Preventive Stations, but rather nearer to the Western one, S. ½ W., Westerly. Minster West Mill, its apparent length to the Eastward of Powell's Belfry, S. ½ E. Shingles Beacon E. by S. ½ S. Tongue Light-vessel S E by E. ½ E. N.E. Tongue Buoy S.E. ¾ E. North Pan Sand Buoy West. Girdler Light-vessel W. by N. ¾ N. A red revolving light, showing a flash at intervals of 20 seconds, will be exhibited from the vessel every night, from sunset to sunrise, on and after the 1st October next.

Caution.—Mariners are to observe that no vessel is to be navigated to the northward of this Light-vessel. By order. P. Hubertson, *Secretary*.

Trinity House, London, September 27th.

Capt. Dunn, of bark Dragon, of Salem, reports that on the passage from Fejee Islands to Shanghai, September 12th, 1855, he saw an island not laid down in his chart, to the northward, distant five miles; got good observation and made its position latitude 8° 20′ N., longitude 167° 46′ E., by chronometer. It is a small sand island, with low bushes, 6 miles in circumference, contains a few inhabitants; is surrounded by a coral reef, about ½ mile from shore, and can be seen 15 miles from ship's masthead. The same afternoon saw Michaleff group to the northward, as laid down on the chart.

The island of Vitoa, or Turtle Island, to the south-west of the Fejee group, has a large reef to the S.W., extending 5 miles from the land. It is quite dangerous, being in the track of vessels from San Francisco to Sydney.

NEW-YORK, August 22d, 1856.

The Commissioners of Pilots for the port of New-York, having recently fined several boats fifty dollars each for refusing to put pilots on board of vessels when required, it is deemed an act of justice that the following extracts, showing the duties and obligations of masters and others as to the employment of pilots, should be published for the information and guidance of all interested.

On entering ports, or navigating difficult passages, where custom has stationed pilots, it is the duty of the master to take one on board, and by no means to proceed without; and not to discharge his pilot except at the accustomed places. A neglect of this part of his duty destroys the policies on vessels and cargo, and renders both masters and owners liable to the assured.

SEC. 29. Any person not holding a license as pilot under this act, or under the laws of the State of New-Jersey, who shall pilot, or offer to pilot, any ship or vessel to or from the port of New-York by the way of Sandy Hook, shall be deemed guilty of a misdemeanor, and on conviction shall be punished by a fine not exceediug one hundred dollars, or imprisonment not exceeding sixty days; and all persons employing a person to act as pilot, not holding a license under this act, or under the laws of the State of New-Jersey, shall forfeit and pay to the Board of Commissioners of Pilots, the sum of one hundred dollars.

The foregoing notice was read and approved by the Board of Underwriters.

A. B. NEILSON, *President*.

ELWOOD WALTER, *Secretary*.

A 2d class Nun buoy has been placed on the bell rock, near the entrance to Portland Harbor. It is painted with black and red horizontal stripes.

QUARANTINE NOTICE.—Sir: By an order of the 11th of August, the Board of Health determines that in consequence of the appearance of some cases of yellow fever at Oporto, no vessel shall be admitted there from ports suspected of that disease, whatever may be their cargoes, without their having been benefitted (beneficiadas) in an accredited lazaretto.

CHAS. JAUNCEY, *Agent to Lloyd's*.

Capt. G. A. HALSTEAD, R N., *Secretary, Lloyd's*.
Lisbon, August 14th, 1856.

IRON BEACONS—CONNECTICUT RIVER.—Iron pile beacons have been erected at the north end of Calve's Island, south of Essex, at Brockway's Reach, north of Essex, and at Devil's Wharf, south of Chester, Connecticut river, Conn.

The structures are surmounted by a gallery and lantern, 23 feet above ordinary low water, painted black, are lighted by small pressed glass lenses, and are visible as far as the bends of the river will permit.

They will be lighted at sunset, on the evening of the 10th of September, and nightly thereafter.

The Calve's Island Beacon must be left on the starboard, and the two others on the port hand going up the river.

By order of the Light-house Board.

CUSTOM HOUSE, NEW-YORK,
COLLECTOR'S OFFICE, September 5th, 1856.

SIR—The enclosed is a copy of a letter received by me yesterday, from the Consul General of the Two Sicilies, and as it contains information of importance to ship owners and ship masters trading with ports in the kingdom of the Two Sicilies, I send it to you for publication if you deem proper.

Yours respectfully,
HEMAN J. REDFIELD, *Collector*.

[COPY.]
CONSULATE GENERAL OF THE TWO SICILIES,
NEW-YORK, September 1st, 1856.

H. J REDFIELD, ESQ., Collector of Customs, New-York—SIR:—Please take notice, that all American vessels, with a part or the whole of their cargoes (even one package), destined for a port of the kingdom of the Two Sicilies, ought to have their bills of health and manifesto certified at this Consulate, otherwise they will not be admitted in said ports. It makes no difference whether these vessels go to a Sicilian or Neapolitan port direct from here or indirectly.

As I have written this day to the government of Naples, to suggest that the above measures be carried out there, it would be useful to inform American captains thereof, so as to avoid any impediment to them, for which they would themselves be responsible. As soon as my propositions have been adopted at Naples, I shall obtain an official announcement from the State Department.

The preceding please consider, for the present, as only a communication for advice, of which you may make such use as you deem proper.

Yours truly,
Commander ACHILLE FERRER,
Consul General and Charge d'Affaires for Naples.

Ipswich Lights.—The fixed and revolving lights at Ipswich have been extinguished, and in their stead, a fifth order lens, showing a fixed light, varied by flashes once every minute and twenty seconds, has been placed in the East Tower.

By order of the Light-house Board.

Boston, September 1st, 1856.

The light-house at the Southwest Pass, below New-Orleans, careened by the severe blow on the 9th of August, and the lookout at the pilot station was entirely destroyed.

The light-house at Point de Fer, Atchafalaya Bay, was blown down in the gale of Sunday, August 10th. There will be no light at that point until the necessary repairs are made.

The Light-house on Stone Key, entrance to Sierra Morena, was completely destroyed in the gale of September 4th.

The following lights are discontinued. At Silver Creek and at Barcelona (or Portland) on the south-east shore of Lake Erie, New-York ; at Port Clinton, in Portage Bay, and at Cleveland, east side of entrance to Cleveland, (on the hill) Ohio.

We take the above from an exchange. We do not think the Light-house on the hill in this city will be discontinued. It certainly should not.—*Cleveland, Ohio, Gazette.*

Range Lights in New-York Bay.—Range lights have been erected in New-York Bay for guiding vessels through Gedney's channel (between the extremity of Sandy Hook and Flynn's Knoll to S.W. Spit,) through the Main Ship Channel, from S.W. Spit to the Narrows, and from sea through the Swash Channel to the Main Ship Channel, These lights are the Fresnel lens apparatus, and will be exhibited for the use of mariners about the 1st of November, in advance of which due notice will be given.

By order of the Light-house Board.

LAUNCHES.

At Brunswick, Me., September 25th, barque A. Kimball, of 590 tons.
At Frankfort, Me., September 15th, barque Mary B. Rich, of 500 tons.
At Mattapoisett, Mass., September 28th, brig Isabel Eliza, of 365 tons.
At Columbia, Me., September 16th, brig Isabel, of 300 tons.
At Damariscotta, Me., September 22d, a barque of 550 tons.
At Bath, Me , September 27th, ship J. Patton, of 1000 tons.
At Canton, Md., September 26th, barque Marion, of 400 tons.
At Medford. Mass., September 29th, by T. G. Foster, Esq., ship Hesperus, of 1000 tons.
At Baltimore, Md., September 24th, a barque of —— tons.
At Pittston, Me., September 29th, ship S. J. Young, of 650 tons.
At Machias, Me , September 30th, barque Vigo, of 420 tons.
At Port Jefferson, L. I., September 22d, by J. M. Baylis, Esq., schr. E. A. Conkling, of 300 tons
At East Dennis, Me., September 15th, ship Webfoot, of 1100 tons.
At Westbrook, Connecticut, October 1st, by W. Merrill, Esq., barque Labiguena, of 330 tons.
At East Haddam, Me., September 13th, schr. Mary J. Carlton, of 250 tons.
At Kennebunk, Me., September 18th, ship Union, of 660 tons.
At Kennebunk, Me., September 13th. ship ——, of 450 tons.
At Thomaston, Me., September 16th, ship Forrest Eagle, of 1300 tons.
At Bath, Me., September 16th, a ship of 100 tons.
At Calais, Me., September 16th, ship Constitution, of 1300 tons.
At Westerley, R. I , September 11th, barque Alice Prevost. of 500 tons.
At Quincy, September 22d, by G. Thomas, Esq., a ship of 1000 tons.
At Mystic, Conn., October 1st, ship Atmosphere, of 1500 tons.
At Bath, Me., October 2d, by Thomas Harwood, Esq., a ship of 1100 tons.
At Rockport, Me., September 16th, schr. L. A. Orcut, of 200 tons.
At Amesbury, Mass., October 4th, by S. McKay, Esq., a tern. schr. of 400 tons.
At Yarmouth, Me., September 16th, barque Mary C. Fox, of 350 tons.
At Freeport, Me., September 17th, ship Pennsylvania, of 900 tons.
At Yarmouth, Me., by L. Walker, Esq., ship Samuel Locke, of 800 tons.
At Yarmouth, Me., September 16th, barque Abbyla, of 526 tons.

At Portsmouth, N. H., September 19th, ship Kate Prince, of 1000 tons.
At Frankfort, Me., October 8th, by G. Dunham & Co., schr. Reynard, of 230 tons.
At New-York, October 11th, by Thomas Stack, Esq., ship J. A. Stamler, of 1100 tons.
At Portsmouth, N. H., October —, a ship of 1200 tons.
At Salem, Mass., October 14th, barque Guide, of 500 tons.
At Hallowell, Me., October 4th, brig Madeira, of — tons.
At Bath, Me., October 13th, a ship of 1070 tons.
At Harpswell, Me., October 11th, schr. G. Deering, of 250 tons.
At Woolwich, Mass., October 13th, ship C. Davenport, of 1000 tons.
At Portsmouth, N. H., October 14th, ship Eagle Speed, of 1100 tons.
At Pembroke, Me., October 13th, barque Philena, of 400 tons.
At Belfast, Me., October 11th, barque Adriatic, of 400 tons.
At Brewer, Me., October 13th, schr. Open Sea, of 200 tons.
At Boston, October 14th, ship Asa Eldridge, of 1200 tons.
At Boston, October 14th, a ship of 1100 tons.
At Portland, Me., October 16th, ship Hamburg, of 1100 tons.
At Waldoboro, Me., October 13th, ship W. P. Storer, of 1500 tons.
At Brooklyn, N. Y., October 8th, by Messrs. Chapman & Dunbar, ship F. Gebhard, of 1150 tons.
At Gouldsboro, Me., October 15th, brig Chesterlean, of 300 tons.
At Rockland, Me., October 13th, schr. Pilot's Bride, of 130 tons.
At Thomaston, Me., October —, ship Lizzie Spalding, of 800 tons.
At New-York, October 15th, by W. H. Webb, Esq., ship Uncowa, of 1050 tons.
At Addison, October 7th, barque Winona, of 391 tons.
At Brookhaven, L. P., October 11th, schr. F. H. Abbot, of 256 tons.
At Belfast, Me., October 14th, by Messrs. Carter & Co., barque H. D. Brookman, of 500 tons.
At Ellsworth, Me., October 14th, by J. W. Jones, Esq., barque Hyperion, of 600 tons.
At Hoboken, N. J., October 23d, schr. Arzac, of 400 tons.
At Orrington, Me., October 14th, brig Richmond, of 289 tons.
At Thomaston, Me., October 16th, ship B. Webb, of 1343 tons.
At Thomaston, Me., October 19th, ship Mary O'Brien, of 1200 tons.
At Baltimore, about October 11th, by J. P. Fardy & Co., brig West Indian, 250 tons.
At Baltimore, about September 20th, by J. P. Fardy & Co., barque Wheatland, of 500 tons.
At Baltimore, September 20th, by Thomas Hooper, Esq., schr. Thomas Jefferson, 160 tons.
At Baltimore, October 21st, by Goodwin & Stevens, a schr. of 70 tons.

OUR STATE ROOM.

DEATHS.—Died, in New-Orleans, 30th Sept., 1856, aged 27 years, Captain E. Cook, Jr., of ship Fanny Forrester, of New-York.

Captain Cook fell a victim to that desolating scourge, the yellow-fever, thus adding another to the multitudinous number of Northern men who have sacrificed their lives in like manner. Cut off in the flower of youth and pride of early manhood—leaving homes and hearts. The subject of these remarks was possessed of more than an ordinary degree of talent; a quickness of perception, power of concentration, and versatility of adaptation; his energy of will enabled him to succeed in whatever he undertook. When a schoolboy, he seemed to learn by intuition that which to his compeers was an arduous task. Early in life he manifested an interest in shipping, which amounted almost to enthusiasm, exhibiting itself in miniature models as the most desirable amusement for his leisure hours. In whatever he engaged he wrought with all the energy of his earnest nature. At the early age of 21 he became a ship-master, the duties of which station he performed with the fullest satisfaction to all concerned, and was in every subsequent enterprise not only successful, but eminent in his profession, while

his mind was stored with a general knowledge of all such subjects as would interest the patriot and the man of taste, whether in the fine or useful arts. Modest, as genius ever is, his friends knew him to be a logical writer, endowed with rare poetic talent, which, with cultivation, would have added to his fame. Kind and sympathetic in his disposition, he possessed in a high degree those qualities which so bind and endear us to each other. During his brief career he had made two voyages round the world; and when on board the bark Clara, in 1855, on a voyage from San Francisco to Callao, he made and completed, in a tasteful style, the model and draft of a clipper-ship, which, if built from, would be creditable to his name as a marine architect of no mean pretensions. Frank and generous, he won all hearts; and by promptitude in the fulfilment of promises, was deemed incapable of an ungenerous deed. A true friend, an affectionate brother, and a dutiful son, his loss makes a wide breach in the circle of friends.

Died, on board the bark Brothers, at Cienfuegos, Sept. 5, Capt. Sidney S. Gooch, formerly of Yarmouth, Me. Also, on the 30th August, John Naver, seaman, of New-York; at sea, on the 11th September, William Wunhen, seaman, of New-York; Sept. 13th, Edward Johnson, seaman, of New-York; and on the 20th Sept., Henry Baxter, seaman, of New-York, all of yellow-fever.

ORDERS.—Surgeon G. R. B. Horner, *Fleet Surgeon* to the Home Squadron; Surgeon J. S. Messersmith, detached from the Receiving ship *North Carolina*, and ordered to the Navy Yard, Mare Island, California; Surgeon George Maulsby, to the Receiving ship *North Carolina;* P. A. Surgeon J. S. Gilliam, to the Naval Hospital, New-York; Lieutenant Washington Gwathmey to Ordnance duty, Norfolk yard; Purser S. Ramsey, transferred from the disbursing duties of the yard, Pensacola, to the inspectorship of provisions, clothing, etc., on the same station; Purser W. W. J. Kelly, ordered to the Pensacola yard, in place of Purser Ramsey. Lieut. F. B. Renshaw, to the Rendezvous, Philadelphia.

RESIGNATION.—Lieut. Jas. Parker, Jr.

NAVAL ACADEMY AT ANNAPOLIS—APPOINTMENT OF ACTING MIDSHIPMEN.—The following candidates for admission into the Naval Academy at Annapolis, have passed successfully the usual preliminary examinations, and received appointments as Acting Midshipmen:

Lyman B. Foster, Me.	Wm. Whitehead, Penna.	J. H. Comstock, Ark.
Chas. S. Whitman, Me.	H. DeHaven Manley, Penn.	A. D. Wharton, Tennessee.
Henry N. Herman, N.H.	John Weidman, Penna.	Wm. W. Carnes, Tennessee.
Sullivan D. Ames, R.I.	P. S. Sanderson, Penna.	Chas. Kean, Ky.
Henry B. Robeson, Conn.	W. Scott Schley, Md.	J. C. Watson, Ky.
Chas. S. Hunt, Conn.	Wm. H. Barton, Md.	Woodhull S. Schenck, Ohio.
John W. Philip, New-York.	J. M. Stevenson, Md.	J. D. Marvin, Ohio.
Francis S. Kinney, N. Y.	Julian M. Spencer, Md.	Samuel B. Paddock, Ohio.
John Hesse, New-York.	T. E. M. Adams, Md.	Harold Lewis, Ohio.

Francis S. Brown, N. Y.	Isaac P. Webster, Md.	T. S. Greiner, Ohio.
Stephen A. McCarty, N. Y.	Francis L. Hodge, Virginia.	Wm. C. Jacobs, Ohio.
Silas Casey, N. Y.	Thos. L. Dornin, Virginia.	Moses S. Stuyvesant, Ohio.
Wm. W. Smith, N. Y.	R. D. B. Sydnor, Virginia.	Simeon P. Gillet, Indiana.
Ormus A. Doolittle, N. Y.	Jno. S. McKinley, Virginia.	Edwin R. Devault, Indiana.
E. J. W. Raynsford, N. Y.	Roy M. Hooe, Virginia.	James O'Kane, Indiana.
D. S. Hayward, N. Y.	Thomas L. Harrison, Va.	Ernest D. Cordell, Missouri.
H. D. Foote, N. Y.	John J. Hunt, Georgia.	Antoine R. McNair, Mo.
Alfred T. Mahan, N. Y.	James L. Hoole, Alabama.	R. P. S. Talbott, Mo.
Benj. Gregory, N. J.	John W. Allen, Alabama.	G. R. Griswold, Mich.
F. A. Shute, N. J.	Chas. W. Read, Mis.	F. A. Davenport, Mich.
Bruce Lambert, Penna.	Louis J. Burt, Mis.	Wm. H. Hall, Iowa.
Samuel W. Knipe, Penna.	Geo. P. Harris, Louisiana.	J. O. Bradford, California.
J. C. Dowling, Penna.	Geo. T. Howard, Texas.	C. K. Kirby, Dis. of Columbia.
Robt. H. Porter, Penna.	Simeon B. Reardon, Ark.	Robt. L. Meade, D.C.

PORTSMOUTH, N. H.—The sloop *Vandalia*, Commander Root, arrived on the 29th September, after over three years' service in the East Indian squadron, during which she sailed 54,000 miles. Nine months was the longest consecutive period she remained at any one port, and that was at Shanghai. She was present at the bombardment, assault, and capture of that celebrated city, and, during the whole of her stay there, maintained on shore a guard of seamen and marines, to preserve the neutrality of the foreign settlement, and protect the persons and property of American residents from being injured in the struggle then waging between the Chinese imperialists and insurgents.

The ship also assisted to exterminate the hordes of pirates that infest the Chinese waters. Upon one occasion, while lying at anchor, becalmed, in the delta of the Pearl river, near Hong Kong, some of these miscreants were seen boarding and plundering trading junks, almost within range of her broadside. Three boats were instantly lowered and manned by a party of seamen and marines, under the command of Lieutenant John Walcutt, who went in pursuit. The pirates, laden with booty, took to an island about ten miles distant, where they esconced themselves behind some precipitous rocks, and kept up a continuous fire upon the advancing boats. The *Vandalia's* dashed on through a shower of grape and musket balls, landed, scaled the rocks, routed the nest of rascals, and killed and wounded an unknown number, whereupon the rest escaped to the jungle. The work of destruction was then completed by burning their junks and houses in the vicinity. Two prisoners were taken, who were afterwards delivered to the Chinese authorities. In this gallant affair Lieutenant Walcutt had only one man killed and one wounded.

In consequence of being detained so long upon the East India station, she had a great deal of sickness. Three of her officers were invalided and sent home, and others have been detached and exchanged, so that very few of the original number remain. Nineteen of the crew have died, including six by

casualties, in a complement of two hundred; a small number, considering their exposure, and great length of the cruise, and the unhealthiness of the climate.

New-York.—The *Niagara* progresses slowly lately, and will not, probably, be ready for sea in less than two or three months yet. Her enormous guns, 12, each weighing 15,900 pounds, 11 inches bore, and 11 feet long inside, are yet are West Point. The carriages are being constructed at the Yard in the most improved manner.

The *Resolute* is nearly complete, and her men ordered to be shipped, though her officers, excepting Commander Hartstein, have not yet been detailed. She is in very complete order in all respects.

The *Mississippi* is in an advanced state of repair. Martin's boilers are to be put into her, and she is "expected to be better than new," which is, perhaps, the best reason for so thoroughly repairing her. The *Mississippi* has been quite equal to what some of our much newer steamers have proved to be, and her overhauling may serve as a test of advancement in our naval architecture.

The *Release*, Lieutenant Commanding J. H. North, arrived from Pensacola on the 1st ult.

The Revenue Cutter James Campbell.—How she was repaired at New-London, Conn., under the superintendence of Wm. Thatcher, Esq. This vessel is about 140 tons; was built about three years since by Mr. Hood, the well-known ship-builder at Somerset, Mass. The trunk, deck and cabin were taken out, when it was discovered that she was rotten nearly down to floor-heads, all for want of ventilation. The ceiling-clamps and deck frame were then taken out, and nearly all her frame and keelson were removed, and new timber substituted. The outside plank was also removed above light water-line, and the vessel was re-built by the day, at a cost of supervision as follows: One superintendent at $6.00; one sub-superintendent at $2.75; one foreman at $3.00; and all this on a vessel of 140 tons—probable cost of repairs about $10,000. Who is responsible?

Washington.—The *Wabash*, it is said, has made a very successful trial-trip from New-York to Portsmouth, N. H., and back to Washington, from whence she returned to New-York on the 28th. She is reported to have averaged from 12½ to 13 knots from N. H. to Portsmouth, and we sincerely hope that all the fine things said of her may be verified by future service.

The Merrimac.—The Naval Department has intelligence that "this superb specimen" of American naval architecture in her late trip across the Atlantic, arrived out in fourteen days and one hour from land to land, and in fifteen days from port to port, averaging 9¼ knots.

The British Press makes the following criticisms upon the *Merrimac:*

"The London *Chronicle*, of October 2, says:—'There is a big steamship of

war, called a frigate, and denominated the *Merrimac*, now lying off Southampton, concerning which sundry formidable paragraphs have lately obtained considerable circulation. In spite of the name, as a frigate, this vessel is quite as long and heavy, and would be nearly as cumbrous in manoeuvring, as the *Duke of Wellington*. The Americans, in fact, are beginning to build big ships of war, just as we are making the discovery that such large vessels are useless.' "

Speaking of some experiments made with a monster wrought-iron gun, at Shoeburyness, the London *Times* remarks:

"This trial comes at an opportune moment, when the question of introducing larger pieces of ordnance into our men-of-war has received much attention, owing to the presence in the Southampton waters of the American frigate *Merrimac*. Her guns, which are 11 inch bore, are of such a formidable character, that it is believed our most vaunted ships of war could scarcely cope with her. In the event of an engagement with a vessel of nominally greater strength, she would be able to keep at a distance, which would prevent the risk of being boarded, while she would be able to direct a destructive fire against her opponent. Surely it is time for government to consider the necessity of keeping ahead of other nations in those matters which have made her mistress of the seas."

[From the Hampshire Telegraph, Oct. 7.]

"We would now, to complete our conception of the armament of the *Merrimac*, make a comparison between the weight of metal from her broadside and that of one or two of our own ships. The *Shannon*, 51, one of our own crack frigates, is 2,400 tons burthen, and has the following armament: Thirty eight-inch guns, twenty long thirty-two pounders, one pivot sixty-eight pounder. Taking the eight-inch guns as throwing hollow shot of fifty-six pounds, and solid of sixty-five, the broadside thrown by the *Shannon* would be of the weight of 1,114 pounds hollow shot, and 1,329 solid pounds. The weight of broadside which the *Merrimac* of 3,900 tons burthen would throw, would be in solid shot a weight of 1,716 pounds, and in shells 1,382 pounds. This, as we understand it, is as to her permanent armament; but, then, the length of her guns would give her a great advantage in range.

"The *Duke of Wellington*, of 131 guns, has the following armament, being of 3,700 tons burthen:—Lower deck, ten eight-inch guns of 65 cwt, and twenty-six thirty-two pounders; middle deck, six eight-inch, 65 cwt., and thirty thirty-two pounders of 56 cwt.; main deck, thirty-eight thirty-two pounders of 42 cwt.; upper deck, 20 thirty-two pounders of 25 cwt, and one 68-pounder pivot gun of 95 cwt. This armament would throw, according to our calculation, a broadside of 2,306 lbs. weight solid shot. But, in the case of this vessel also, the range of the guns would, we apprehend, be less than that of the *Merrimac's*. *The superiority of the Duke's speed over*

the Yankee, would, however, we should fancy, give the former the opportunity of closing with the latter before any material damage could be caused by superiority of range."

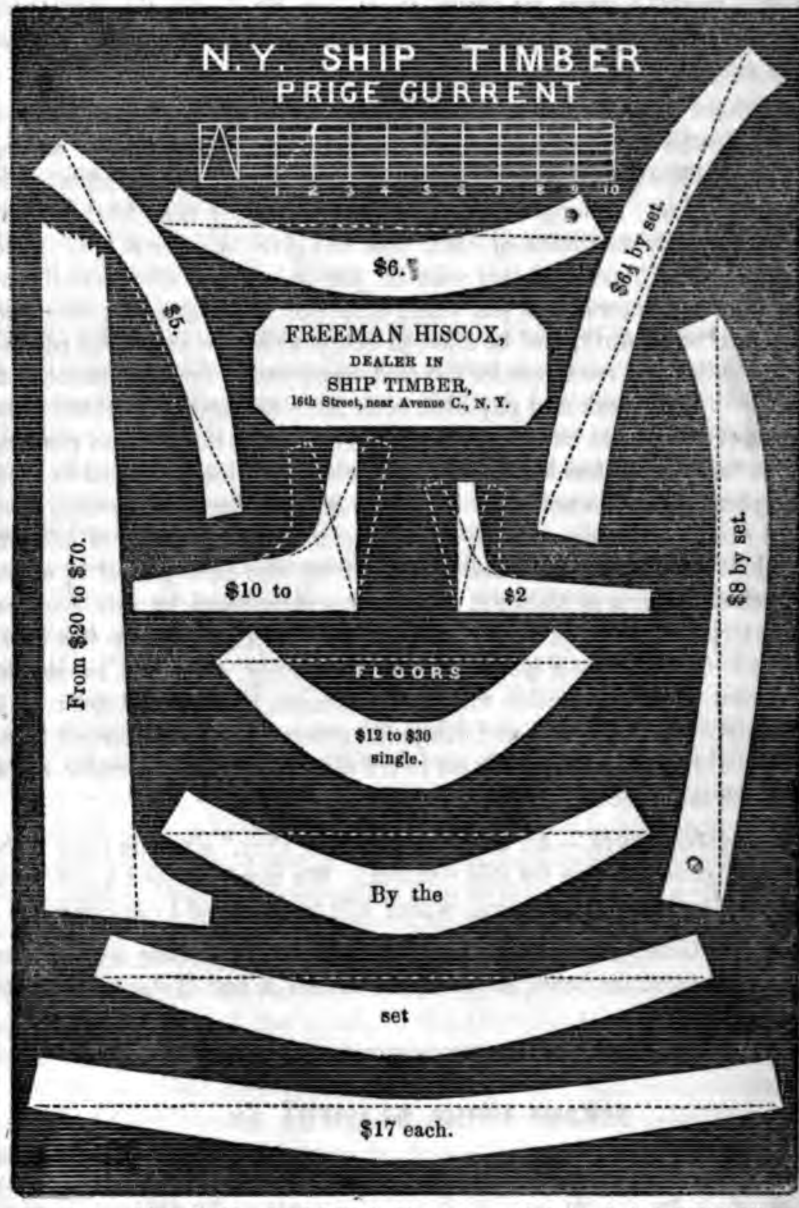
Decisions of the Attorney-General.—*The Hon. Attorney-General Cushing*, since he has been such, has furnished to the Naval service several most remarkable evidences of his entire want of a due appreciation of its honors and rights. Among the first decisions emanating from him, was one that "retrospective ascription of rank does not give increase of pay retrospectively." The bearing of this was, on junior officers, who were, by orders, kept on active service at sea, while others of their rank and date were privileged to be off duty, and be allowed every available means for reviewing their studies and readiness for the first opportunity for examination, to advance both their rank and pay over even their seniors on arduous duty. And, as if this were not bad enough, even temporarily, the decision prevents those who have been thus kept on active service receiving pay equal to those who are permitted to do nothing. Next, he decided that the *pension fund*—a fund principally gained to the Government by Naval victories and gallant conduct—shall not be allowed to even those who have gained it, unless under such conditions as render it accidental. According to this decision, *duty* is interpreted to be present action: if an officer or man in the Navy has served fifty years—a *life time*—and completely worn out in its service, he cannot gain a pension for his dependants, in case of death: while he who may have idled away and dissipated nine-tenths of his *nominal* Naval service, should he happen to die on board ship or otherwise, under active orders at the time, secures it!

To Correspondents.—An article from "Fair Play," also one from "Correspondent," came too late for this number. We have received a communication from Captain J. G. Lawton, which will be attended to in our next.

Errata in October number.—In the engraving illustrating Brooke's improved attachment for boats, page 44, the letters A and B should be transposed.

NEW-YORK TONNAGE, 3rd QUARTER, 1856.

	Vessels.	Tons.	Qrs.	Men.
Arrivals of United States Vessels	814	453,355	2	14,086
Clearances of do. do.	548	341,236		10,523
Arrivals of Foreign do.	321	111,485		4,545
Clearances of do. do.	341	124,990	2	5,220
Arrivals of U. S. Coasters, Registered	133	53 608		—
Do., do. Licensed	270	58,465		—
Clearances do. Registered	354	132,894		—
Do., do. Licensed	964	237,427		—



A set floors and futtocks, $9 each. Oak Flitch, 30 cents per cubic foot; oak plank, $36¾ to $40 per M. deck plank, $35 per M.; hackmatack timber, 25 cents per cubic foot; chestnut, ditto; cedar, 30 to 50 cents; yellow pine timber, rough, 35 to 45 cents per cubit foot; ditto, sawed, $28 to $30; yellow pine plank $20 to $30.

OAK KNEES—5 inches, $2 50; 6 inches, $5; 7 inches, $7; 8 inches, $10; 9 inches, $12; 10 inches, $15; above, $1 50 per inch.

HACKMATACK KNEES—5 inches, $1 50; 6 inches, $2 50; 7 inches, $4 25; 8 inches, $6 00; 9 inches, $8 10 inches, $9 00; above, $1 per inch.

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DIRECT COMMERCE BETWEEN CHICAGO AND LIVERPOOL.—VOYAGE OF DEAN RICHMOND.

AMONG the many commercial enterprises which have been inaugurated within the past year, that of direct commerce between the ports of our northern lakes and the markets of Great Britain is justly entitled to the notice of the shipping interests of both sides of the Atlantic. The introduction of steam as a commercial link between Europe and America was not more important in prospect, than the triumphant demonstration of the feasibility of direct trade between the ports of our internal seas and those of the trans-Atlantic, established by the voyage of the DEAN RICHMOND. American schooners have acquired a reputation for surprising the world by their movements, and their singular qualities excite curiosity whenever they venture into foreign waters; hence, the appearance of a fresh-water clipper in the crowded docks of Liverpool, laden with wheat, and hailing from the port of Chicago, in the State of Illinois, was calculated to elicit a lively degree of interest from all classes of the British people. Her voyage was pronounced wonderful and extraordinary; the vessel and cargo were found in first rate condition, and promised to prove a very profitable speculation in the market.

The voyage of the DEAN RICHMOND from Chicago and Milwaukie to Liverpool is indeed a memorable event in the annals of commerce, and reflects the highest credit upon its projector, Thomas Richmond, Esq., one of the pioneers of lake navigation, and now a wealthy merchant of Chicago. His expansive mind, many years since, grasped the idea of the future greatness of the "far west," and the nature of the navigation which was required, and would ultimately be realized, to develop its numerous sources of wealth, and to establish its trade upon a commanding basis.

"The advantages of sailing direct for Europe with such cargoes as are destined for European markets, would seem apparent at a glance. It is only required that the navigation of the Lakes and the River St. Lawrence, and their canals, be improved to admit the passage of vessels of proper size and construction, built for the trade, to demonstrate that the transhipment of goods, the staple product of the States communicating with the great Lakes, and of England, is only an expediency due to the infantile condition of the trade. The transhipment at Buffalo and New-York, with the interior transit of the State, adds largely to the cost of produce and merchandise, in freight and commissions, while a manifest deterioration of goods is not an unimportant draw-back upon this commerce. In point of time and cheapness, the route of the Lakes and the River St. Lawrence, to Europe, may be made to compete successfully with any other over which provisions and breadstuffs reach Great Britain—a result which cannot fail to increase the trade, and add to the wealth of both countries. The canals will not at present admit the passage of larger vessels than the *Dean Richmond*, 387 tons, but a moderate expenditure of money would ensure the navigation to vessels of 1,000 tons.

In order to lay this subject fully before our readers, we have drawn upon the politeness of the owner, master, and builders of the *Dean Richmond*, who have kindly afforded us every desirable facility necessary to a just presentation of their enterprise and skill. We will first give the

LOG OF THE DEAN RICHMOND.

July 17th, 1856.—Sailed from Chicago at 7 P. M., wind W. N. W., with 5,000 bushels of wheat on board, bound to Milwaukie.

18th.—Arrived at 5 A. M., (distance 90 miles,) and received on board 9,000 bushels wheat.

19th.—Sailed at 4 P. M.; wind light, from E. S. E.; bound for Liverpool.

20th and 21st.—Wind light, from E. S. E.; made South Manitou Island, at 5 A. M.; wind shifting to W., made the light-ship at 7 P. M.

22d.—Wind N. W.; passed through the Straits of Mackinac into Lake Huron, at 5 A. M., making Sheboygan light at 8 A. M.; passed 40-mile Point; calm.

23d.—Reached Thunder Bay Islands, at 8 A. M.; breeze freshening; made Point aux Barques at 5 P. M.

24th.—Noon, light breeze, S. E. (ahead.)

25th.—Breeze from S. E.; at 8 A. M. passed Forestville.

26th.—Took the tug Julia Morton, at entrance of St. Clair Flats, at 3 P. M.; at 8 P. M. reached Detroit.

27th.—Sailed from Detroit, at 4 P. M.; anchored at 8 P. M., off Bar Point, entrance to Lake Erie.

28th.—Wind N. W.; sailed with five other vessels, passing Point Pelee, at 9 A. M.

29th.—Wind S. W., fresh; made Port Colborne, the entrance to Welland Canal, at 8 P. M.; made fast for the night.

30th.—Towed to Allanburgh.

31st.—Towed to Thorold and 12th lock.

August 1st.—Reached St. Catharines at noon, and end of Canal at 4 P. M.

2d.—Sailed at noon, with light breeze from N. W.; entering Lake Ontario, passed Niagara light at 6 P. M.

3rd.—Made Long Point Light at 7 A. M., reaching the Docks at 4 P. M.; wind from E.; beat to Delloos.

4th.—Passed Delloos at 4 A. M., passing Tippet's Light at 8 P. M., entering St. Lawrence River; a dead beat to Cape Vincent.

5th.—Anchored at 1 P. M.; beat down to Clayton; anchored at 8 P. M.

6th and 7th.—Lying at anchor at Clayton.

8th.—At 8 A. M., steamer took us in tow; 6 P. M., reached Dixon's Landing.

9th.—Discharging grain into steamer in order to get through the Canal; [water low.]

10th.—Sunday.

11th.—Discharging grain to nine feet water; 9 A. M., towed into Cornwall Canal, and passed through by 4 P. M., without trouble.

12th.—Steamer towed us to the Beauharnois Canal at 8 A. M.; passed through in eight hours.

13th.—Towed to Lachine Canal, and through it to Montreal; at the quay at noon.

14th.—Taking in the wheat discharged at first Canal; 3 P. M., took steam-tug for Quebec.

15th.—Towing to Quebec, reaching it at 8 P. M.

16th.—Discharging wheat to put vessel on the slip.

17th.—Sunday.

18th.—Hauled on the slip; examined vessel, and caulked the fore-foot.

19th.—Hauled off slip.

20th and 21st.—Wind foul.

22d.—At 1 P. M. sailed for Liverpool; wind ahead, blowing fresh E. N. E. Some 50 sail of vessels, ships, barques, brigs, schooners, &c., &c., had got under weigh ahead of us when the wind was fair; we soon came up to them hand over hand, passing every one of them easily: came to anchor at 7 P. M., off Grosse Isle, accomplishing what a sail-vessel had never done before in one tide. "So our pilot says," and so it seemed to us, as there was not one of the fleet in sight when we came to.

23d.—Got under weigh at 2 A. M.; wind light ahead; worked down about 10 miles and came to anchor; a dead calm 7 A. M.; got under weigh at 12 M.; wind light ahead; passed two ships and several schooners bound down the river with us; came to anchor at 7 P. M., at South Traverse.

24th.—Got under weigh at 1 A. M.; wind light ahead; passed several ships, brigs, &c., &c.; came to anchor at 7 A. M. off Kamarouska; calm; got under weigh at 11 A. M.; passed barques Rosendale, Britannia, and Corinthian, brig Mary Brack, and ship Importeur, all bound out with us; came to anchor at 7 P. M., off "Brandy Pots Islands." (They take their name from the color of the water on them.)

25th.—Got under weigh at 1 A. M.; light wind ahead; calm from 5 till 10 A. M., when a fair wind sprung up from the north-west; arrived off Green Island at 12 M.; discharged our pilot at 1 P. M.; kept away on our course for the Gulf of St. Lawrence; wind light until 6 P. M., then came a fine breeze from north-west; passed Bick Island Light at 8 P. M.

26th.—Had a fine breeze from north-west all night; passed Cape Damonts Light, the entrance to the river, at 9 A. M.; the St. Lawrence River from the Brandy Pots to this point, Cape Damonts, is about 170 miles, and at that point the Brandy Pots is about 13 miles wide, and at Cape Damonts it is about 30 miles wide, quite a lake; at 6 A. M. passed two barques and one brig bound out with us, and run them out of sight in five hours; at 10 A. M. met three barques bound to Quebec, beating up; commenced blowing strong from West with heavy sea running from eastward ahead, also heavy sea from

westward; *an ugly sea for a vessel;* took in everything but foresail, forestay-sail, and jib—let her run until 3 P. M.; wind died nearly away; got on everything but light sails; at 6 P. M. wind shifted north, heavy with rain; double reefed the mainsail, took in flying jib.

27th.—Had a bad, thick night; wind heavy from the north, with rain squalls; heavy chopped sea; at 8 A. M. made west point of Anticosti Island; wind yet fresh, but not so much sea; got on our light sails; at 10 A. M. passed two barques and one brig, bound out with us, and ran them out of sight in six hours; passed the south-west point and light of Anticosti at 12 M.

28th.—At 1 A. M. passed the light on the east end of point of Anticosti Island, and hauled up for the Straits of Belle Isle; at 5 A. M. wind shifted to the west—a fine breeze but a heavy head sea; saw a great many black-fish, some very large, say twenty feet in length (they are a species of whale, full of oil); wind continued west all day; sun bright and weather clear; saw a fine black whale in the afternoon, close by; made Cape Whittle, east coast of Labrador, at 4 P. M., also the reef of rocks off it.

29th.—Had a fresh breeze from the westward all night; sometimes logged twelve miles per hour; at 8 A. M. passed to the leeward of a large iceberg; wind fresh; getting thick; made Point Ferrolli, west coast of Newfoundland, at 12 M.; at 3 P. M. made Green Isle, off the coast of Labrador, at entrance of Belle Isle; at 5 P. M. passed a large iceberg aground in 35 fathoms of water; it showed about fifty feet above—this was near the entrance of Forteau Bay, Labrador, which, by the way, is a fine little harbor. The mouth is about three miles wide, and also runs about the same distance back, with high, bold shores. We made this point at 6 P. M., and came to anchor in twenty-five fathoms of water.

30th.—No wind; visited the fishing establishments; caught two barrels of cod in two hours.

31st.—Weighed anchor at 6 A. M.; wind S. W.; passed N. E. point of Belle Isle at 8 P. M.; squally; took in gaff-topsails, flying-jib, and mainsail.

September 1st.—Set mainsail; wind N. W.; thermometer 49 degrees; at 4 P. M., in lat. 52 deg. 28 min., lon. 53 deg. 28 min.; gale increasing; put three reefs in mainsail.

2d.—It blowed very hard all night, and a tremendous sea running; vessel rolled heavily but easily; wind gradually increasing, also the sea; at 2 P. M. took in the mainsail and jib; at 6 P. M. double reefed the foresail, and took in fore-staysail, and housed both topmasts; it is now blowing a severe gale, and sea running high; our vessel makes better weather than we expected.

3d.—Had a very bad, stormy night; very heavy squalls of rain and wind, sea running very high; at 12 P. M. got fore-staysail to steady her; at 4 A. M. wind increasing, and blowing harder than ever—a perfect gale. The crew, most of whom have been at sea nearly all their lives, say they never saw a heavier sea or gale of wind; the vessel makes good weather considering the sea and wind; wind continued all day, blowing at times fearful; it seems as though it could not blow much harder.

4th.—Continued blowing heavy all night; weather clearer and not so much rain; at 6 A. M. wind lulled a little, and from appearances the gale is abating; still blowing hard; vessel has shipped some heavy seas, as all of them do not come regular; at 6 P. M. wind died nearly away, but left a very ugly dead sea, so much so we did not dare to make any more sail.

5th.—Nearly calm all night; heavy dead sea running; vessel rolling badly as there is no wind to steady her; a very light air from southward sprung up, but not enough to fill sails; rolled heavy all day; at 9 P. M. saw a whale playing under our bows.

6th and 7th.—Calm; 4 P. M., vessel making nine knots; wind S. W.

8th.—Strong breeze, making ten knots.

9th.—It blowed heavy all night from N. W., N., and N. E., with rain squalls; mainsail and foresail were squatted one reef; we logged sometimes over thirteen knots; (she made the ocean perfectly white around her,) at 6 A. M. we saw a large ship steering west; she is the first and only craft we have seen since we've been on the Atlantic, which is nine days; wind continued fresh from same quarter until 6 P. M., when it died away to a light breeze; we are about 800 miles from Cape Clear.

10th.—Wind light from N. N. E. all night; we averaged about five knots; heavy sea running from northward; saw a ship about ten miles to windward, bound to America; also saw a ship ahead bound with us; gained about five miles before dark; (she was not in sight next morning;) got our topmasts up, for the first time in eight days had a light breeze nearly all day; (nearly calm.)

11th.—A dead calm all night; heavy sea; vessel rolling and slatting about badly; long faces this morning, except sailors who are fond of long passages.

12th.—Breeze from S. W.; running six knots.

13th.—Breeze S. W.; passed two barks; saw screw-steamer going west.

14th.—Good fair wind, S. W., all night (also a good moon); made a topsail schooner ahead at 1 P. M.; passed her at 7 P. M.; she looked like a revenue cutter; we serve them all alike, from five to seven hours run them out of sight; saw several porpoises; had a good breeze all day, say seven knots.

15th.—Good seven knot breeze all night from westward, occasionally rain; good wind all day; heavy sea; at 8 A. M. calculated we were about thirty miles from Cape Clear "Coast of Ireland;" could have seen the land if it had been clear; we have been fourteen days from land to land, and twenty-one days from pilot to pilot; a very quick run, considering six days calm.

16th.—Fine breeze all night; at 6 A.M. saw the land off the coast of Ireland; fair wind all day; passed several vessels bound in.

17th.—Passed Trasker light at 1 A. M.; blowing heavy; fair; made Holyhead and Skerries; at 2 P. M. passed them; at 6 met Collins' steamer Baltic bound out, signaled her; took pilot at 7 P. M.; arrived in the river Mersey at 11 A.M.; came to at Liverpool at 12 P.M.; blew very heavy from northward.

The following letter from Captain Pierce deserves recording; as a navigator, he is worthy of the vessel and the voyage:

September 20th, 1856.

Dear Sir,—We arrived here Wednesday last, all right, without breaking a rope yarn, which will be a great consolation to your Underwriters. I am sure it was a great relief to me when the pilot planted himself on the deck of the "Dean Richmond." I know the road to Liverpool, and shall, if I live, many times more go over it. I find that Lake skippers can navigate the Atlantic *about* as well as any of them; in fact, I am proud to say that I have crossed the Atlantic with the worst rig that could be selected from our Lakes for such a voyage. The problem is solved and the fact established that Lake vessels can cross the Atlantic as well as any craft afloat, and if any person wants to take it up, let him come along, and I will select a Lake vessel and try him to Liverpool or any other place that he may wish to name. We encountered a gale of wind, and found the "Richmond" capable for all emergencies, was top of the seas every time, and the two reefed foresail was not becalmed, as many predicted it would, if we got a gale of wind. The rudder did not come out of water, and, in fact, I think she is better adapted to Atlantic seas than most of their sea-going vessels. We out-sailed all vessels that we fell in company with; we were ahead of vessels that left Quebec ten days before us—in fact, they are not here yet—and some days of the time our topmasts were housed, and four days under a two reefed foresail. We made no preparations for crossing more than I

would to go from Chicago to Buffalo; carried our boat on our davits, anchors on our bows, and all things the same as for Lake navigation. The Quebec papers commented largely on our voyage, predicted that we would never arrive in Liverpool; that our spars were too long, our bowsprit too straight out, loaded too deep, and many other objections; but we have beat them all, come out ahead, and, if I live, shall show them more of Yankee enterprise and skill.

We have done nothing in regard to selling cargo or vessel as yet; this is not Chicago for doing business the same day, although there is *some* business done here. We are going to visit London, Paris, Cork, and Dublin; it will occupy but a short time to go to them all. If any one there wants to send vessels here, tell them not to send a fore and after; it is not the rig. I must close.

Yours truly, D. E. PIERCE.

B. S. Shepard, Esq., Chicago.

C. Y. Richmond, Esq., who was supercargo, wrote to his father, as follows:

Liverpool, September 17, 1856.

Dear Father,—We arrived here this evening, having made a splendid run. I enclose you a log of the trip, which will give you an idea of winds, calms, etc. We are yet lying in the river. There are great crowds of shipping in the river, but we go into Queen's dock to-day.

We think we shall get the above prices for our cargo, as almost every New-York shipment has arrived heated. Ours, as far as we can ascertain, is in good condition, which is more than the consignees expected.

We intend inviting the business community to take a sail with us after we get unloaded. People don't get excited here as they do with us, but every one who have seen us pronounce the vessel a wonder. We had a very heavy gale coming over—I am told as severe as is often experienced, but we rode it out first-rate, and kept our boat on our davits all the way across.

We have beaten everything that we fell in with, with perfect ease, and I don't think there is anything here that can outsail us. Our run from Quebec is considered a very quick one. Vessels—and very fiue ones too—which left too weeks ahead of us, are not here yet.

Tell vessel owners that I see no good reason why our good strong vessels cannot come here as well as not. The main trouble on the ocean is, that after a breeze the swell never apparently dies away, and a vessel rolls considerably.

I will write more particularly by next steamer, or in time for vessel owners to send out this fall if they wish. I have merely time now to write you that the project you have talked of for years has been successfully accomplished. It is time for the mails to close.

I have gained twelve pounds on trip.

In great haste, C. Y. RICHMOND.

Hon. T. Richmond, Chicago.

The Dean Richmond was built in the spring of 1856, by Quayle & Martin, for Richmond & Co., of Chicago, and while her dimensions and *model* were adapted to passing through the locks of the Welland Canal, between lakes Erie and Ontario, her construction was in all particulars equal to the best practice of shipbuilding known on the lakes. She was deservedly classed A. 1, but while she was recognized as a superior vessel at

the time of her construction, and is indeed such, it would be injustice to the many others built by the same firm and those by other shipbuilders on the lakes, for us to pronounce her the finest. Cleveland has furnished many staunch and swift vessels, and so have other ports; and we do not hesitate to say, that the vessels of these internal seas, as a class, have no superiors for sailing among the fleets of the old world, as the future history of this new route to Europe will prove. It will yet become a common transaction to sell both vessel and cargo in England, and thus a foreign market for our surplus Lake shipping is destined to spring up and give a new impetus to building in the West, improving the quality and advancing the price—a desideratum for shipping in any waters.

The DEAN RICHMOND was sold at Liverpool for $27,000. She cost $19,000, which leaves the very handsome profit of $8,000 to her owners. The cargo was sold for an advance of 68 cents per bushel over its cost in Liverpool, netting a profit of $9,520.

The frame of white oak flitch, 5 inches thick, was spaced 20 inches, and moulded 14 inches at keel, 11 inches at the bilge, and 6 inches at planksheer. The main kelson was 12 × 13 inches; sister kelsons, 11 × 12 inches; beams, 10 × 8 inches; outside plank, 3 and 3½ inches; ceiling, 3 inches, and four strakes were four inches; bilge strakes, 50 × 5 inches; clamps, 19 × 10 and 17 × 4 inches; arched strakes, worked over the ceiling, 3 inches thick. All thick stuff of inboard planking was scarphed and edge-wise bolted. From an application of the Rules of Lake Underwriters, which have been established since this vessel was built, it appears that she is quite up to, if not ahead, of the new standard.

It will be perceived from the lines that she is not a very sharp vessel, but may be taken for one of the best examples which are modelled with reference to passing the Welland Canal, which has for many years given *dimensions* to lake shipping. There is not a builder in that part of the country, who values his memory of figures, who cannot tell the precise limits of the *locks* within an eighth of an inch. Cases have occurred of vessels having to pass this canal that had to be stripped of their wales, in order to squeeze through the narrow locks. It was for the want of beam, mainly, that the *Dean Richmond* rolled so greatly. Her dimensions are as follows: length of keel, 135 feet; overall, 145 feet; beam, 26 feet 2 inches; hold, 11 feet 9 inches. Tonnage, 387. Draft of water, light, 5 feet. Cargo at 7 feet draft, 150 tons; at 9½ feet, 350 tons; at 10 feet, 500 tons.

MASTS AND SPARS.—Mainmast, 90 feet, 25 inches diameter; topmast, 60 feet, 13 inches diameter; foremast, 87 feet, 26 inches diameter; topmast, 60 feet, 13 inches; main boom, 66 feet, 19 inches diameter; gaff, 36 feet; fore boom, 56 feet, 18 inches diameter; gaff, 36 feet. Bowsprit, 22 feet, 20 inches diameter, (of white oak;) jibboom, 60 feet diameter, 15 inches, (of white ash. The centre-board is 25 feet long, and 12 feet 7 inches wide—6 inches thick.

In conclusion we may remark, that although the pioneer vessel in the Lake and Liverpool trade, so auspiciously opened, has occupied 60 days in making the voyage, including some 12 or 14 days of detentions and calms, it is entirely within the power of shipowners on the Lakes to supply themselves with vessels of suitable model and rig, which, after the canals shall have been enlarged, as they must be to prosecute this new trade with large vessels, shall make the voyage between Chicago and Liverpool, in the proper season, as quickly as it is now performed by any except clipper ships, between New-York and Liverpool. Here are the distances:

From Chicago to Quebec,	1,600 miles.
From Quebec to Cape Race	860 "
From Cape Race to Liverpool	2,010 "
Total	4,470 miles.

From New-York to Liverpool is 3,020 miles.

Bark-rigged vessels of 1,000 tons, if of suitable model, may contend successfully against the odds in distance with the ordinary freighting ships which are now employed on the Atlantic. We look upon this new trade as one that will sooner or later call into existence the finest fleets that ever traversed the north Atlantic. Steam will undoubtedly be found on this route as on all others, but the sailing vessel may have this advantage, she can spend the winter on *salt water*, and return to the fresh in the spring.

We now give the incidental charges on the *Dean Richmond*, vessel and cargo:

Tonnage at Welland Canal	$35
Tonnage between St. Lawrence and Canal	50
Tonnage through three Canals—total	24
Tonnage from Montreal to Quebec	60
Pilotage, Quebec to sea	30
Tolls on vessel and cargo—total	160
Total	$359

There are no port charges, light dues, or pilotage on the Lakes. Arrangements will be effected during the winter for organizing a chartered company, whose operations will commence in the spring of 1857, when, no doubt, many vessels will be found engaged in this direct trade.

The question has been mooted, Are Lake vessels suitable for sea-going purposes? An "*Old Cruiser*" expresses his opinion in the Buffalo *Express* as follows:

"I believe we have weather and sea on our Lakes that are as trying to vessels as they have on the Atlantic, and a vessel that is capable of successfully facing and weathering out our heavy gales on the Lakes without damage to hull or cargo, and without seeking a lee, such a vessel is capable of navigating any water, salt or fresh, in the round world. Our vessels are very burthensome and very light draft, work well and sail fast, but very generally lack strength for our own water, and of course do for the Atlantic. We have but few vessels

that have the backbone to successfully compete with our heaviest gales, then how can we expect them to weather the gales of the Atlantic, where there are no *holes* to dodge into. Compare the timbering, planking, and fastening of the "Dean Richmond" with our first-class vessels generally, and you will find a sad discrepancy in favor of the "Dean"—principally in the *frame* and *fastenings;* she has been quite successful, but was found none too strong. The writer has been permitted to compare the survey of the "Dean Richmond" with that of other first-class Lake vessels, and also with the rules and specifications recommended by the Marine Inspectors of the Board of Lake Underwriters, to be observed hereafter in constructing Lake vessels to rate A 1; and while we found the "Dean" much superior to the general run of Lake vessels which are classed A 1, we found her but little, if any, *below*, or inferior *to* the standard recommended and approved by the Board of Lake Underwriters—her frames are moulded deeper, but less in siding, the distance in the clear between frames is two inches less in the "Richmond," than required—her inside plank and bilge strakes are heavier, and her dead-rise is greater; her fastenings are somewhat lighter, spike shorter; but, take her all in all, she is about equal to the standard hereafter required, and with proper protection to her hull and fastenings from the operations of salt water and the salt water worm, and under a different rig—say such as the Great West has—she would be good for any trade suitable for vessels of her tonnage. It is to be hoped that shipbuilders will profit by experience, and build hereafter as good, if not better vessels than the "Dean Richmond," and thereby establish a good character and demand abroad for Lake craft."

Should our advice be given, we would say, make your Lake vessels LIFE-BOATS by giving them a *plate iron kelson*, secured to the deck and bottom with at least two transverse bulkheads of the same material. The cost would be trifling, compared with the strength and safety gained, and for this end iron is cheaper than oak. Who will introduce this most reasonable and feasible improvement? There need be no more complaints of *spinal* imperfections in shipping.

We have given place to the lines of the schooner *Sweepstakes*, on the same plate with the *Dean Richmond*. She was built by the same firm, and is pronounced one of the fleetest and strongest schooners ever built at Cleveland. Particulars of her construction have not arrived in time for this number. On one of her trips to Chicago, with a cargo of 500 tons of coal, she sailed by the log, with favoring wind, eighteen miles an hour. She has made the run from Buffalo to Cleveland in thirteen hours and a half—distance about 190 miles. The model is among the best examples to be found on the Lakes, and is, we believe, the production of Mr. Martin.

THE PACKET SHIP "BRIDGEWATER," OF NEW-YORK.

THE packet ship *Bridgewater* is one of the few "oak-built" ships which have been constructed of late years. Her master being of the number of those who esteem nothing like *oak* for covering a ship's timbers, went to Philadelphia, in 1854, to get this ship built, and she is, without doubt, one of the most thoroughly-constructed and best-equipped ships in the United States. It was designed that the scantling of every part should be the largest given to a ship of her size and class; and this idea has been fully carried out. She was built by William Cramp, for Chamberlain, Robinson & Co., and superintended by Captain E. W. Barstow, who is also a part owner.

The *Bridgewater* was launched in 1855, and is of the following dimensions:

Length of keel straight rabbit, . . .	$184\frac{4}{12}$ feet.
Length of U. S. measurement, . . .	192 "
Breadth, extreme, ...	43 "
Depth, ...	29 "
Tonnage, ...	1400 tons.

By the contract, she was to be completed in hull, spars, joiners' work, iron work, blocks, boats, anchors, chains, rigging (both standing and running), hawsers, warps, sails, painting, gilding, plumbing, pumps, ventilators, capstans, steering gear, chain stoppers and lifters, winches, fire engine, brass work, etc., etc., for the sum of $87,000. This amount, however, fell far short of the ultimate and actual cost of the ship. When she was completely equipped and fitted for service, she stood to her owners in the value of $107,805 $\frac{59}{100}$. The contract proved ruinous to the builder, in a pecuniary view, as it most always happens when it is undertaken to furnish extraordinary ships at ordinary prices.

The keel is of white oak, in two tiers, the upper 17×14 inches, in four lengths, with 8 feet horizontal scarphs; the lower 17×12 inches, in five lengths, scarphed the same way, through-bolted and secured by composition dove-tails. No shoe. Her floors are all of white oak, sided from 12 to 14 inches, moulded 18 inches at heels, 14½ at head. The second futtocks are dowelled to floor heads. The moulding size of frame at top breadth is 6¼ inches. Each frame consists of 13 pieces, all of white oak, the doublings being from 5 to 6 feet. The stanchions are of locust. Frames are bolted with one-inch square iron. The keelson is sided 16×14 [illegible] pieces, scarphs long and coaged. The two riders are 16×14 and [illegible]ter kelsons are 13×14, having a groove for a water-course. [illegible] first bilge strake—7 feet 4-inch—white oak plank are work[illegible] are 8 inches thick, diminished to 5 and 6 at ends, 11 inch[illegible] 15 in number to the lower air strake, which is 4 inches wi[illegible] length, and then air holes are made between frames to ends [illegible]

two clamps are of hard pine, 8 × 12 inches. The bilge kelsons are 13 × 13, worked over the first seam in bilge strakes. The lower set of pointers cover heels of cants, the second extend from deadwood up under the second beam, with a large hook; a short hook is worked above, and between this and the deck hook another pair of pointers, with hook, complete the securities here. Aft she has one set of pointers, with hook between. Her hold stanchions are 11 inches square. Kneed with white oak knees at both ends. The stem is in one piece, 30 × 12 inches, and the stem knee extends from apron to first square frame. The stern post is 16 × 12, tenanted into keel, and secured by composition dovetails. The stern knee reaches from transoms to the aft square frame. There are seven transoms, main (the ship has a square stern) is 11 × 16. Stern frame light. The hanging knees in lower deck have 5 feet bodies and 3½ feet arms, sided from 10 to 12 inches, throat moulded 19 to 23 inches, all white oak. Lodging-knees have 3½ feet arms, sided 9 inches, also white oak. Lower deck beams of southern pine, 28 in number, sided 15, moulded 12, placed 6 feet from centres. The carlins are 7 × 5. Waterways, of southern pine, 16 × 16, stringer on top 14 × 11, deck stringer 11 × 11. Three strakes of ceiling close up to the air strake, all of 7 inches thickness; air strake 4 inches wide; two middle deck clamps 12 × 7; hanging knees of white oak 4½ bodies, 3½ feet arms, sided 8 to 9 inches. Throat moulding 19. Lodging-knees sided 7 inches, 3½ feet arms, all of white oak. Stanchions of white oak, turned, and 8 inches at base. Middle deck beams 30 in number, 14 × 13; carlins 7 × 5, all of southern pine. Two pointers forward coming aft to hanging-knee, with knee between, making a moulding size of 5 feet by 10 inches. Two pointers aft in same manner. Waterways 15 inches square, top stringer 16 × 11, side ditto 11 × 8, of southern pine. Three strakes worked to air strake, 10 × 6 inches; air strake 4 inches wide, then two clamp strakes 10 × 6 of white pine. Hanging-knees of hackmatack, 4½ feet body, arms 3½ feet, sided 8 inches; throat 17. Lodging-knees of hackmatack, 2 feet 9 inches arms, sided 6 inches. Upper deck beams 32 in number, of southern pine, 13 × 10; carlins, 7 × 5. Fore and aft stuff on all decks, 7 × 6 inches. Stanchion of upper 'tween decks of locust, turned 8 inches. Breasthook 10 feet long, 3½ feet throat, sided 9 inches.

A heavy oak timber is worked around the entire stern, bolted through transom and ceiling; also has a false transom 18 × 6; two knees tie the transoms to the side. There are 12 counter timbers of white oak, all dovetailed into main transom, 14 × 8 sided.

All her decks are of *clear* white pine (beams are without *sap*), 5 × 3½ ins. Upper deck waterway of white pine 13 × 13, long scarphed. Planksheer 16 × 6 inches, of white oak, long scarphed. Stanchions of locust, one on each frame, 8 × 5½. Main rail is of white oak, 12 × 6, and 4½ feet high. Bulwarks 4⅝ inches wide, 2 inches thick, centre beaded, abaft of trunk and

forecastle are 3½ inches thick. Stanchions of monkey rail 16 inches high, 4×3½. Rail of hard pine, 4×5. Bulwark one inch thick, 5 strakes centre-beaded. Pin rails of white oak, 9×3½.

The first garboard strake is 9×14, with watercourse on inner edge; 2nd ditto, 7×14; 3rd ditto, 5×14 inches; then 8 strakes of 4 inch plank, next increased to 4½ inch thickness, of which there are 17 strakes; then two strakes of 8 inches width increased to 6 inches thickness, which is maintained for the wales, being 18 strakes in number 7×6, from 40 to 60 feet long, all of white oak. Then are worked 11 strakes of 5×4, and from these to planksheer four strakes of 5×5, all of hard pine. Her stern is planked with 3½ inch plank, caulked and sheathed with narrow ½ inch boards.

The bow is finished with a light long cutwater; head is a figure of Fame. Catheads are 15×15, four feet outboard, nine inboard, worked down on the forecastle deck, and securely bolted to upper deck.

Bowsprit bits 14×14. Pallpost 21 square. Windlass bits 21×9, and kneed. Forecastle is 5½ feet under the beams, which are white pine, 6×6. Stay bits are 15×15, cavil 30×19. Fife rail of foremast, 11×5. There are three sets of deck bits 13×15, with gipseys on two sets. Two iron capstans on forecastle. Main topsail sheet bits 10×10, cavil 20×8, fife-rail 11×5. Hatch coamings of upper deck of black walnut, 7½ to 6 and 10½ to 8 inches. Main capstan large and highly finished. Cabin on deck 40 feet long, 23⅔ feet wide aft, and 25⅔ feet wide forward, with a trunk 8 feet high, and passage 4 feet wide around it. The channels are 6 inches thick, upper 7½ wide, and lower 14.

From deck to deck is 7½ feet. Cargo port on main deck, 3¾ feet by 3¼ feet, with iron castings weighing 1100 lbs. Two cargo ports on each side, for lower deck, 3 feet by 2 feet, castings 1¼ inches thick, weighing 800 lbs. Windlass 11½ feet long. Rudder post 19 inches, 11 feet long; width of rudder, 3$\frac{2}{12}$ feet. Fitted with two midship pumps with composition chambers, 8 inches diameter, with lead suction pipes below, 5 inches diameter, enclosed in wood; also two midship copper pumps, 6½ inch chambers. The pump well encloses the four pumps and sounding pipe, and directly under the main hatch there is a small scuttle by which to enter, and descend on a ladder to the limber planks.

Draft of water when launched 11¾ feet aft, and 10½ feet forward, with bower chains on board, one bower anchor, and topmasts on end. She draws 14 inches more water than a ship of same dimensions and similar model built in New-York. Regarding the fastenings, the bolts are of large diameter, and numerous for a ship of her class and size. Every bolt that could be is riveted, and all trenails possible to be driven through are wedged on the ceiling. A vast amount of materials and labor are represented in the good ship *Bridgewater*. Can a ship of her capacity, strength, finish, and elements of durability, be furnished for less cost?

COAL OIL FOR ILLUMINATION AND LUBRICATION.

THE procurement of a cheap, suitable oil for the purposes of illumination and lubrication is a result of truly national importance, and especially interesting to commercial men. The maritime portion of the community are at the same time the producers and consumers of immense quantities of oil; it is therefore strictly within our province to notice the discoveries and improvements of the age, which incline us to believe that the earth, as well as the sea, is hereafter to furnish us light and lubricity, of equal quality, at cheaper rates. The disappearing whale, upon which we have so long depended for oil to illumine our coast, lubricate the machinery, and light the cabins of our ships, is being rapidly driven by our energetic fishermen into frozen and inaccessible seas, whither, even before many years, the gigantic arm of steam must ultimately follow, and direct the capture of the last of his species. From the consequences of ending the whale fishery at no very remote period, without having discovered a substitute for the oleaginous matter of this marine monster, we are quite secure. The developments which have been made by experimental analysis within a few years, and which have resulted in manufacturing enterprise, have firmly established the fact that some descriptions of coal can be made to yield an oil which, for the purposes of illumination and lubrication, has never been excelled.

The economy of Nature in supplying light and motion to the creations of the universe, may well be imitated by man. For the former the purest and most subtle gases are consumed; for the latter the most refined fluids are furnished to lubricate the moving parts. All animals are supplied with a frictionless medium between the solid parts of the joints and over the internal passages of the body; and the outer covering of animals is furnished with the same oily substance in quantity and quality, according to the density of the element in which they move and the velocity they maintain. The animals of the sea are striking instances of this. All mechanism designed for motion must be governed by the same laws, and its economy can only be maintained on the same principles of facilitating motion; this can only be done by the purity and chemical properties contained in the oil or lubricating substance. The immense amount of motion in cotton manufactories furnish the means of applying the most scrutinizing tests for ascertaining the powers of lubricity any new oil may contain. Sperm oil has been most approved by cotton manufacturers for lubricating machinery; its superior excellence, compared with other oils, fully compensating for the high price which it commands. The general rule has been, that the most expensive oils have proved the best lubricators; hence the many efforts at adulteration, and the desirableness of a pure article at a moderate price. Marine machinery suffers greatly from friction and oscillation, but much, also, from the crude substances often employed as lubricating ma-

terials. It is matter of little doubt that if our large steamship companies were to test properly the lubricators used on the machinery of their ships, it would be found difficult to meet with substances offering greater resistance to motion, and in other respects chemically unfitted for the purposes for which they are used. The *purity* of the oil supplied to the marine engine is of very great importance. The mere mechanical phenomena of lubrication is not all that is to be taken into account. The large bearing surfaces exposed to friction, and the nature of the metallic alloys of which they are now composed, (copper, zinc and tin,) render them susceptible of electric influence, which, when once exerted, is always liable to a repetition, producing heat, expansion, and all the consequences flowing therefrom. We invite the attention of marine machinists and steamship owners to the examination of this subject, knowing full well that economy in using *coals* is not all of the secret in the economical working of machinery, and the realization of power in the speed of a steamship. There is a science in lubrication, and with a better knowledge of it than that now prevailing, we would not be surprised if a material could be discovered for lubricating the bottoms of ships, in imitation of marine animals, which, if accomplished, would prevent foul bottom, and add greatly to the velocity.

The question arises, where shall be obtained the purest, best, and cheapest lubricators? It does not appear possible to reduce the price of sperm oil, which is growing dearer annually; we feel warranted in pointing to the oil-bearing coal fields of our country.

For illuminating purposes, pure sperm oil has been found by government the best for light-house consumption, and an enormous quantity is required annually. For signal and binnacle lights, sperm oil is used less extensively—its place being often supplied with common burning oil, and sometimes with explosive fluid, which should never be admitted on shipboard. Oil was used for burning in lamps as early as the epoch of Abraham, nineteen centuries before Christ, and it is to this day one of the most useful articles for illumination ever discovered. Almost every vegetable and animal product is capable of producing oil, yet there are but few so rich in its properties as to make it profitable to attempt its manufacture from them. The whale fishery furnishes us with the grandest example of oleaginous pursuits; and, although evidently past its meridian trade, commercial history furnishes no parallel to its importance. The whaling fleet of the United States is larger than those of all other nations combined, and now employs 635 vessels, with an aggregate tonnage of about 200,000 tons, not less than 15,000 men, and $10,000,000 capital. Last year the product of the fishery was 72,649 bbls. sperm, and 184,015 bbls. right whale oil. The sperm oil sold at an average of $1 77$\frac{2}{10}$ per gallon, and the whale at $0 71$\frac{8}{10}$—the aggregate sales of the entire product am[illegible] about ten and one-half millions of dollars.

The manufacture of oil from coal is not a new discovery; but the existence of coal beds in this country, capable of yielding a sufficient quantity of oil to pay for extraction, has but recently been demonstrated. The Boghead coal of Scotland has for several years afforded a superior lubricating oil, which is used upon the English and French rail-roads—the demand being in excess of the supply. It is said to be preferred to the best sperm oil. In Nova Scotia there is another deposite of coal at the Prince Albert mine, which yields a very good quality of oil. But the finest oil-bearing coals hitherto discovered are those worked by the Breckenridge Coal Co. in Kentucky. The products of this coal are purer, and the quantities greater, than any other known. Very extensive works have been erected at Cloverport, Ky., a consolidation of the oil and coal companies has been effected, and from this union of money and mineral we anticipate the most important results. The present works of the Breckenridge Co., which is merely a commencement, has cost $60,000, and are capable of containing thirty retorts, with the necessary tanks, stills, &c., for refining the crude oil. They are now manufacturing 1,000 gallons daily, but will soon double this quantity. The present works are calculated to manufacture 20,000 bbls. of oil per annum. Twelve other manufactories of equal capacity could produce a quantity equal to that gathered from the entire whale fishing of this country, and it can be sold for one-half less than whale oil. The competition of this company will be calculated to improve, if possible, the present method of prosecuting the whaling business. Let our friends of the harpoon and lance give up the old ship, and build by a *new model*, to be driven by steam; let them re-organize the business of whale fishing, and we doubt not they may long continue to realize a profit from their ancient pursuit, in defiance of coal mines and chemists. We do not expect they will abandon whaling so long as one can be found, even in the remotest regions; but we look to the Breckenridge oil works to supply the annual decrease in the number of whales killed, and finally to take the place of whale fisheries when this business shall become entirely profitless, at some future time, and meanwhile to keep down the prices of illuminating and lubricating oils, which would otherwise become to dear for use.

Oil is obtained from coal by distillation, one ton of Breckenridge producing 90 gallons of crude, or 70 gallons of refined oil; besides oils, benzole, naptha, parafine, and a residuum of asphaltum are obtained. All these substances are valuable. The coke left after the operation is used for fuel under the retorts and stills, and is ample for that purpose. The burning oil is used for lamps adapted to it, one pint will burn seven hours with a strong brilliant white light, free from smoke, giving out at least double the light of the solar lamp burning fish oils. Its cost is half that of sperm oil, and is relatively cheaper in regard to other whale oils. One peculiar excellency of this oil is, that it burns without crusting the wick, requiring no more

trouble in preparing than the old solar lamp, and is not explosive. Its illuminating power and duration of combustion equals the best sperm; we have witnessed experiments, showing that the temperature at 18 degrees above zero did not disturb its limpidity, and we are informed that it will not congeal with the thermometer at zero. For signal and binnacle lights, it will not chill during the coldest weather, nor require trimming during the night. It is well known that sperm oil congeals with the thermometer between 32° and 40° above zero, and other fish oils as high as 50 degrees. Application has been made to the Light-house Board at Washington to admit a proposal to supply this oil for the use of light-houses. We presume the Board will institute experimental tests to ascertain its comparative value with sperm oil, when, if found equal or superior to the latter, the change will be made in its favor.

The lubricating oil is a separate article from the illuminating, as it contains more or less of parafine, a product in its pure state resembling wax, and used for making candles. The lubricating oil has been tested upon machinery, and found to be equal to sperm. It can be sold for a much lower price, and must come into extensive use.

Specimens of all the products from the Breckenridge coal can be seen at the office of the Breckenridge Oil Company, No. 98 Broadway, New-York. As the development of a new branch of industry, marking the advance of a progressive age, we feel deeply interested in this novel manufacture, and in this view we leave the subject with our readers.

THE SEA-SERPENT SEEN AGAIN.—From the London *Times* we take the following account of the Sea-serpent said to have been seen at sea July 8, 1856:

"SIR,—We hand you the following extract from the log-book of ship Princess, Captain A. K. N. Tremearne, in the London Docks, 15th September, 1856, from China. 'Tuesday, July 8, 1856—latitude accurate, 34 deg. 56 min. S., Lon. 18 deg. 14 min. E.; gentle breeze, fine weather. At 1 P. M., saw a very large fish, with a head like a walrus, and 12 fins, similar to those in a black fish, but turned the contrary way. The back was from 20 to 30 feet long, also a great length of tail. It is not improbable that this monster has been taken for the great sea-serpent. Fired, and hit it near the head with a rifle-ball. At 8 P. M., wind fresh and fine.'

"We submit that the repeated accounts of seeing a marine monster, whatever be its correct name or kind, yet harmonizing in some leading descriptions, forbid longer doubt of some such creature existing, and we enclose you a rough sketch, (as this one appeared,) signed by Captain Tremearne, who has been six years in our employ, and is otherwise well known. His own private log contains a similar record, and we have interrogated others of the Princess' crew, who assert the fact of such appearance. * * *

"We are yours, obediently,

"EDMUND J. WHEELER & Co., *Colonial Agency*,

"4 *Cullom-street*. *September 24th*."

We observe that the "serpent" is now called a "*fish*."

THE IMPORT TRADE OF THE WEST.

SINCE the voyage of the *Dean Richmond* from Chicago to Liverpool, the eyes of our Canadian friends have been opened to the importance of the Import Trade of the Far West of the United States. The *Montreal Gazette* proposes that the merchants of that city become immediately the importers not only for Western Canada, but also for the States beyond. Placed on the great highway between the markets of demand and supply, it is thought that Montreal merchants may hold the key of the St. Lawrence commerce. The necessity of enlarging this new channel of importation for the West is revealed by the fact that a scarcity of vessels exists at Montreal to carry away the produce which has been brought down to that city for European destination, the present season. In order to have sufficient tonnage for this increasing trade, more emigrants and more goods must be brought from European ports. Shippers cannot afford to pay freight both ways on outward cargoes, while competing with New-York; a portion of the imports now commanded by New-York must, therefore, be diverted to Montreal. To freight vessels inwards to the St. Lawrence, and so induce them to Montreal to carry away breadstuffs, is considered an absolute necessity for the extension of Canadian commerce. Our merchants in New-York will have to look to their laurels. Let them take hold of the Mediterranean trade, now almost exclusively enjoyed by English capitalists, and profit by a direct commerce carried on in our own ships. British merchants are beginning to calculate on drawing their grain from Western America, if they can pay for those supplies in British manufactures.

These exports and imports, it is thought, may, to a great extent, pass through the hands of Canadian merchants, who declare their intention to foster the trade in its commencement by affording every facility for transport, as well as monetary credit. The merchants of Montreal are, no doubt, desirous to become the middlemen of the direct trade between Chicago and Liverpool, alluded to in another article—they wish to *make Montreal the seaport for this trade*. It is proposed to put on a line of propellers from Montreal to Chicago, to connect with ocean steamers to Europe, in the expectation that Western produce might easily be laid down in Liverpool in *fifteen* days. To shorten the water carriage between Chicago and Liverpool, a canal has been projected across the peninsula of Michigan, taking advantage of the Kalamazoo River and the River Raisin, below Detroit, thus avoiding the St. Clair flats, and saving about eight hundred miles in the voyage.

We say, first, enlarge the Canadian canals; second, build sailing vessels suitable for the trade—say 1000 tons, and ten feet draft of water; and, third, Chicago will then become the *seaport*, as well as the "distributing point" of this new channel of trade. When the navigation is suitably improved, we should like to furnish the model and plans for a craft that would make the most money in proportion to her cost and expenses. We do not believe in the transhipment system proposed by our neighbors at Montreal.

JAPANESE SHIP-BUILDING AND NAVIGATION.

THE famous Japan Expedition, under the command of Commodore Perry, has placed the world in possession of much valuable information in relation to the industrial arts, productions, and commerce of the singular Empire of Japan. An uncommon interest in this self-isolated people had become universal throughout Christendom, when a naval officer of the United States proposed a mission of friendship to their island shores, and had the good fortune to be appointed for the work. We recommend every nautical man to peruse the instructive Report of Commodore Perry's Expedition. Meanwhile we shall select from its pages a few extracts, which will elucidate the subject of Japanese Ship-building and Navigation.

Among the *fogies* of the world, old and new, the authorities of Japan are entitled to the rankest distinction. The insular position of these people, joined to their quick perception, and exalted skill in workmanship, should have made the Japanese a powerful maritime nation; but the restrictive policy of the government has quite subdued their nautical genius—confining it entirely within the narrow orbit of domestic trade. It is, therefore, to the boats, and smaller craft of Japan, that we are to look for a creditable degree of skill in the art of ship-building.

But, before entering upon a review of Japanese shortcomings, in the art nautical, we are free to admit, that if the astonished visitors which thronged to Perry's exhibition of wonders in science and art, or who gazed in amazement at the ponderous motions of the steam engine of the flag-ship Mississippi, could have realized how much fogyism prevailed in fitting the Japan squadron for sea, they would have smiled at the mock superiority of our knowledge and enterprise, and the assumption of our vast resources in naval prowess. Commodore Perry writes, in his "Expedition to Japan," that "orders were given to fit the squadron for sea with as little *delay* as possible; yet, such was the mismanagement in the equipment of the vessels, that more than once the public were led to suppose that the enterprise had been abandoned, simply from the delay in its departure. More than nine months had passed beyond the time when the Chief of the Bureau of Construction and Equipment had promised that the Princeton should be ready, before that vessel was reported as completed; and when thus reported, she was found on trial to be utterly inefficient for the intended service, owing to the imperfection of her boilers. Some new, and in this country, untried plan, had been adopted in their construction or arrangement, and the experiment cost the expedition the loss of a year. The Princeton never formed part of the squadron, as the Powhatan was substituted for her."

Again, Commodore Perry, alluding to the superior arrangement of British war steamers for disconnecting the engines from the shaft, and permitting

the wheels with their paddles to revolve in the water while the voyage is prosecuted by sail, says, "In American naval steamers it is almost impossible to disconnect the engines, and the only practicable mode of using the sails exclusively, is by the removal of the immersed floats. This requires moderate weather for its accomplishment, and the time necessary for doing it is about two hours, and double that time is required for the readjustment of the floats or buckets." He adds, "It must be acknowledged, with mortification, that our navy is in many respects very backward in availing itself of some of those improvements in steam vessels which have been already adopted by other nations, and even by private enterprise. Since the construction of the Mississippi and the Missouri, the two first ocean war steamers introduced into our naval service, and for a time esteemed the finest in the world, there has been less progress in the building of such vessels than our position as a nation would seem to demand. Most of the maritime powers of Europe, and many companies, and even private individuals, have put afloat such vessels as it must be acknowledged but few of our steamers could fairly compete with in excellence of construction and equipment. The San Jacinto, Saranac, Fulton, and the Princeton, may be pointed to in illustration of these remarks."

This criticism makes up in truth what it lacks in energetic expression. We have said the navy was *behind the age*—and what else does Commodore Perry declare? The Powhatan, which was substituted for the Princeton, after delaying the sailing of the expedition for twelve months, proved little better than the latter. The work quoted states that she was "detained ten days at Lew Chew for the repair of her machinery; and similar delays had been found necessary, in the opinion of her chief engineer, at almost every port at which the Powhatan touched on her outward passage." At Hong Kong "the engineers asked for sixty working days for putting the Powhatan alone in order."

In former ages the Japanese made voyages, in shipping of their own building, to Corea, China, Java, Formosa, and other countries remote from Japan; but when the Portuguese were expelled, in 1637, the natives were denied the liberty of foreign intercourse, or to leave their country—hence navigation declined. Coasting voyages are now made within the limits of the Empire, and only fishing-smacks venture a short distance to sea. The number of fishing and trading boats is immense. The compass is used by their seamen. The model of their larger vessels is clumsy; but the guard-boats of the government are thus described by Commodore Perry: "These guard-boats struck every one with admiration of the beauty of their models, which, by the way, resembled in a remarkable degree that of the yacht *America*. They were constructed of unpainted wood, with very sharp bows, a broad beam, a slightly tapering stern, and a clean run. They were propelled with great swiftness through, or rather over the water, for they seemed to skim

upon its surface rather than to divide it. The crews, numbering in some of the larger boats thirty or more, were tall and muscular men, whose brawny frames were naked, with the exception of a cloth about their waists." On the occasion of Captain Adams' visit to Uraga, the stormy weather and rough water of the bay delayed the return of the officers of the *Vandalia* to the ship; when Captain Adams and party returned, some went back in the *Vandalia's* boats, while others accepted the offers of the Japanese officials, and put off in their craft. Commodore Perry writes, "The superior excellence of the Japanese boats in a sea, was admirably proved, by the fact that those on board of them reached the ship with dry jackets, while the others were wet through by the dashing spray. The use of the scull instead of the oar may partially account for this advantage of the Japanese boats, although their construction has something to do with it. The sculls never leave the water, while the oars are constantly in and out, dipping up considerable spray, which at every stroke is blown, in case of a high wind, all over the persons in a boat of our usual construction." The secret of shape in the Japanese boats lies in gliding over the waves, rather than in cleaving them, as done by our sharp bottomed gigs.

The inhabitants of Hakodadi, one of the ports in Japan where Americans may trade, carry on a large trade with the interior of the Island of Yesso, with Matsmai, and other of the numerous towns and villages, which are supplied with the various products of Japan, by means of the brisk commerce which exists between Hakodadi and the shipping ports on the coast of Nippon, Sikok and Kin-sui. The junks engaged in this shipping trade take from Hakodadi cargoes of dried and salted fish, prepared sea-weed, charcoal, deers' horns, timber, and other produce of Yesso, and bring back rice, sugar, tea, various grains, sweet potatoes, tobacco, cloths, silks, porcelain, lacquered ware, cutlery, and whatever else they may need. More than a hundred of the native vessels sailed for different ports of the empire during the short stay of the Commodore, and all had cargoes almost exclusively made up of productions of the sea. They generally travel along the western coast, as being less boisterous, and affording a greater number of safe anchoring places. These junks are all nearly of the same dimensions in burthen, corresponding to about a hundred tons of our measurement—and in construction, rig and equipment, precisely alike. More than a thousand of these vessels are occasionally seen at one time at anchor in the port of Hakodadi. The principal places with which this commerce is carried on, are Saco, lying south of Matsmai, Yedo, Yetchigo, Nagasaki or Simonosaki, and with Osaka and Owari. Of the craft in which this commerce is carried on, the Commodore has furnished the following account:—

"The ramifications of the laws of Japan leave nothing unnoticed, and it has been more than once remarked, that in no part of the world are the established laws and municipal regulations more thoroughly enforced—and

so in respect to the construction of vessels, or junks, as they are called. The builder is not permitted to deviate from an uniform rule, in model, size, rig, as well as in the interior arrangement.

"In the time of Kempfer, the authorized dimensions of Japanese merchant vessels were, as he tells us, 'fourteen fathoms long and four fathoms broad,' (length 84 and breadth 24 feet;) he says nothing of the depth, but from their flatness I should judge that the hold could not exceed six or eight feet under deck. These proportions have not, in all probability, changed for a long period before Kempfer's book appeared, (which was published in the early part of the last century,) down to the present time.

"Those which came within my observation, and I certainly could not have seen less than a thousand, were all of somewhat similar dimensions and appearance; the drawings to which the reader is referred are so accurate, that any precise description is rendered unnecessary, and it is only requisite to say, that they all have at this time open sterns, with a strong bulkhead aft, to keep the water from flowing into the hold. The rudder of large and unwieldy size, and is hoisted up or lowered by means of runners, worked by a windlass fitted in the cabin, which latter is also used in connection with one on the forecastle for hoisting and lowering the mast and sail.

"The cause assigned for requiring the sterns of all vessels to be constructed in this way, is to render more convenient the management of the rudder. Kempfer and other writers ascribe it to the suspicious policy of the government, which forbids any of its vessels to visit foreign countries; and, until the period of our negotiations, the punishment of death was adjudged against all who, by design or accident, were thrown upon a strange land; and hence it was very naturally assumed, that the navigators of these frail and open stern craft would not venture beyond the sight of land. It is known, however, that the Chinese junks usually have sterns and rudders somewhat similar, and a presumption may be reasonably advanced that this description of rudder was the first substitute for the paddle oar or sweep used in early times for steering, and the recess in the stern has been left for the sole convenience of taking the rudder out of the water.

"It will be seen by the drawings that these vessels have a sharp tapering bow, with a straight projecting stern. They have but one mast, and that is placed considerably abaft the centre beam; one sail only is used, and that a lug with a square head. This is worked by braces to the yard, and by the usual tacks and sheets, and a number of bowlines attached to both leaches, and extending well up towards the head; these are intended to keep the sail flat, when on a wind; but with all their contrivances, it cannot be prevented from bellying to such a degree as to render it impossible for the vessel to work nearer the wind than seven points on either tack; and, to make the sail still more clumsy and unsuitable, the material of which it is made, either cotton or grass cloth, is laced together in vertical breadths, instead of being closely sewed, as with us.

"The main or lower deck is flush, and intended to be sufficiently strong and water-tight to secure the cargo; over this and abaft the mast is a sort of half deck, which covers the cabin, and is also of tolerable strength. In this cabin the officers, passengers and servants are quartered, the different apartments being formed of movable bulkheads or screens; here also is the altar, surmounted by an image of some patron god. Forward of the mast, and above the main or only flush deck, is a sort of pitched roof, with sides resting upon the gunwales; this is covered with boards or thatch, and serves as a shelter for the crew, averaging about thirty in number, and the stowing of the least valuable part of the cargo. Forward of this is the cable windlass, and a space for working the runner forestay; here also the anchors are stowed when on board.

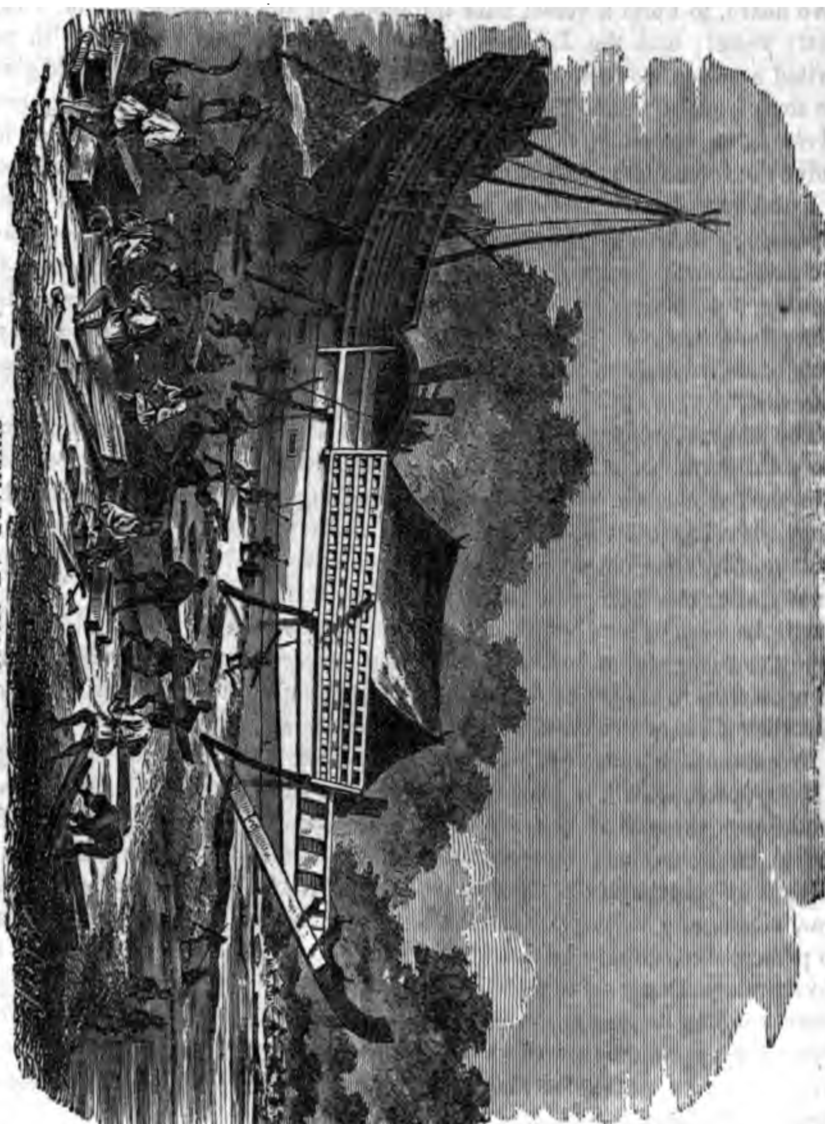
"By this description one may well judge of the unfitness of these vessels even for navigating the coasts and islands of Japan—made, indeed, more dangerous by the prevalence of boisterous and foggy weather in those regions. Doubtless many of them are lost, but their pilots (for each has an under officer of this class) rarely venture a few miles from the land, excepting when running from island to island; and in these passages they never leave port without favorable weather and a fair wind.

"The boats are large and commodious, and in model not unlike the junks; they are usually propelled by sculls, which are worked at the sides on projections from the gunwales, the oars and sculls being long and somewhat bent. At Hakodadi we noticed that some of the boatmen used their oars in the American fashion, excepting that they dropped and raised their starboard and port oars alternately, and not uniformly together as we do. In sculling, the Japanese stand, and keep perfect measure or stroke with their sculls—which is the better preserved by their chanting a monotonous refrain, every alternate man swinging his body in opposite directions—one pushing, the other pulling. The rowers thus vibrating, half of them one way and half the other, the boat is kept perfectly upright as she dashes through, or rather over the water.

"We saw nothing remarkable in the manner or workmanship of the Japanese ship-builders. It is doubtful whether they have any scientific rules for drafting or modelling, or for ascertaining the displacement of water by their vessels; nor perhaps has it been necessary, as the law confines them all to one model and size.

"The tools with which they work are of primitive description, and the finest of their work is not remarkable for its neatness; copper is preferred to iron in fastening, when it can be advantageously used, and this is doubtless owing to the great abundance of the former as a native production.

"It is a singular fact, strongly illustrative of the effect produced upon the people of this strange country, by our friendly and social communications with them, that the law already mentioned, which restricted the construction

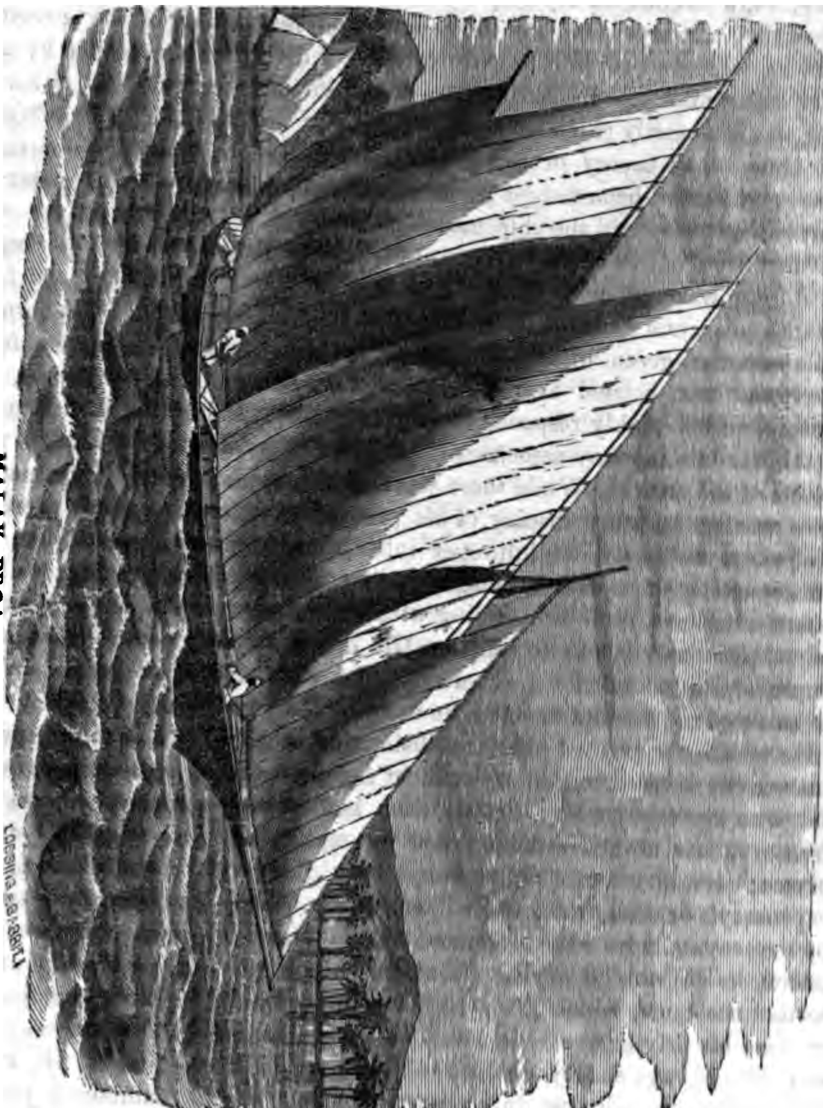


SHIPYARD AT SIMODA.

of their vessels to one particular model, and that also inflicting death upon those of their nation who should return to the empire after having once left it, no matter how, were both suspended; whether annulled or not, I cannot say. Keyama Yesaiman, the Governor of Uraga, was authorized, as we have heard, to build a vessel after the model of the storeship *Supply*, a very pretty vessel; and the Japanese Commissioners who negotiated with me, invited a native we had on board the flag-ship, to whom the sailors had given the *soubriquet* of "Sam Patch," to land and rejoin his family, pledging themselves, in my presence, that he should be treated kindly and provided for, under the immediate protection of one of them. Since then there have been, as I understand, no objections made to the return of any of the shipwrecked Japanese; but how far they have improved in ship-building I have not heard. We saw no war junks, and it is probable they have none of any size—the country not having been engaged for a long time in war. They content themselves, most likely, in putting light swivels or howitzers on the larger of their boats, whenever they cannot depend entirely upon their many land batteries."

The engraving, copied from Commodore Perry's book, by permission of the publishers, D. APPLETON & Co., Broadway, New-York, represents a ship-yard at *Simoda*, another of the ports of Japan opened to American shipping. Having built a merchant vessel from the model of the *Supply*, as spoken of by the Commodore, the Japanese have resolved to build and equip a navy after the European model; an army is also contemplated. Perhaps it will be many years before we shall enjoy a profitable trade with Japan, owing to the peculiar institutions of that empire; and future treaties may be necessary to secure us freer access to the people, still it cannot be denied that the efforts of Commodore Perry possess a lasting value.

From another portion of this interesting book we borrow the engraving of a Malay proa, which, if truthful, as we feel assured, exhibited a remarkable proficiency in marine architecture. The town of Singapore, in the East Indies, is the modern representative of the ancient Malayan kingdom; it belongs at present to the English; "the natives still offer for sale models of war, pirate, and sailing proas used in former times; many of them are said to present exceedingly beautiful specimens of graceful form. So much was Commodore Perry struck with the beauty of the sailing proa, that he proposed sending one home to the New-York Yacht Club," and we wish he had. From the appearance of the craft in the engraving, we have no doubt she would prove a match for many of our American yachts—perhaps the far-famed "*America*" included.



MALAY PROA.

AN EFFICIENT MAN-OF-WAR.

ONE of the best Naval commanders we have ever known was accustomed to say, "law commands my ship." Invariably acknowledging his own responsibility and accountability to the laws and regulations of the government, he was ever careful to require their most strict observance by all under his command. By setting a loyal and virtuous example, his government was necessarily patriarchal, and he lived in the affections of his officers and crew. The theory of relative official duty he had made a constant study, and he had been taught by lessons of experience how good government is made easy and the ship made efficient.

When, in obedience to the orders of his government, he stepped on board the ship he was appointed to carry to a foreign station upon a long and far-distant cruise, and glanced along either side of the gun-deck at the formidable batteries given him to defend, if necessary, the honor of the flag which had been hoisted over his head to be borne round the world, he appreciated his highly responsible position, and took his officers and men by the hand as so many associates of subordinate grades to aid him in the objects of the cruise. While there was firmness in his manner of command, there was no haughty display of his prerogatives, no unnecessary exercise of absolute authority, no improper infringement upon private rights, no countenancing of espial, espionage, tattling and eves-dropping between the messes of officers, no intermeddling with those duties which, under general orders, peculiarly belong to others. His orders to officers were plain and simple, and he took it for granted that they were always executed. With the smile of respect and firmness he won the most implicit obedience.

He took it for granted that the disbursing officer of his command, who was heavily bonded to that department for the faithful discharge of duty, and who received orders directly from and made returns directly to the Treasury, was always qualified and prompt in his branch of the ship's service;—not an educated physician, he meddled not with the affairs of the dispensary, or undertook the control of the sick;—having confidence in his lieutenants, who had graduated at the Naval Academy in their profession, he did not go spying about the ship at all hours to descry unimportant accidents, which are sometimes unavoidable, seeking a pretext to exercise his privilege of censure. In short, his orders were general, and they were always clearly written, and promulgated fore and aft. He knew of no offence until it was duly reported; and while he maintained justice, he always inclined to the side of mercy.

Who that has sailed under a Naval commander that aspired to meddle with every little detail of duty, from the adjutancy of the first lieutenant to the movements of the cooks at the galley, can for a moment doubt that the ship which was commanded BY LAW WAS A HAPPY AND EFFICIENT SHIP?

JOHNNY BULL'S HORN vs. THE MERRIMAC.

THE English Journals affect to make merry over the exhibition of the *Merrimac* at Southampton. They must not, however, assume that she is the best specimen of what can be done on this side of the Atlantic in Naval Architecture. The Bureau of Construction at Washington, like the British Admiralty at London, we admit, have much to learn from the more practical minds of the age, as was clearly demonstrated in the late war.

The United Service Gazette says:

"It is the custom—and one not to be despised—of our trans-atlantic cousins, whenever they have anything particularly striking belonging to them, to send it across to the old country to be admired. If we remember aright, they did this in 1810, or thereabouts, with their, at that time, monster frigate the *Constitution*. So proud, however, and flushed with victory were the Britishers, that they disdained the new creation of their humble relatives. Eighteen-pounder frigates of 1,000 tons were then looked upon, on this side of the water, as the *ne plus ultra* of single-decked ships; and the long 24-pounders mounted on a deck near seven feet in height, were deemed unworthy of imitation. Experience proved otherwise. The thick-sided Yankee frigates encountered our comparatively fragile craft, and soon demonstrated their superiority. John Bull profited by the humiliating lesson, and has, by degrees, endeavored to keep in advance rather than upon the heels of improvement in Naval architecture. The rod has, however, had to be applied occasionally, but it has had a good effect, and the schoolmaster ought not to be condemned.

"Three years ago the maximum dimensions of our frigates was 2,400 tons, and their extreme length about 220 feet. The screw propeller, however, soon proved that additional length was required, and ships were lengthened, first at the bow, then in midships, and of late the architectural department seems to have come to the determination of going the entire animal. Jonathan, not to be outdone, has rivalled, if he has not surpassed, British ideas on this head; and having completed one out of five frigates, has, according to his wont, sent her hither to astonish our weak minds.

"The *Merrimac* has been for some time at Southampton, and her captain and officers, with the accustomed courtesy of American gentlemen, have done all in their power to display their ship to all who have had the curiosity to go on board. Among the visitors may be reckoned a contributor to the *Mechanics' Magazine*, and we have much pleasure in availing ourselves of the details he has supplied respecting this new ship.

"The American frigate presents very formidable features, and, without doubt, such a ship would prove an awkward customer to any of our sailing line-of-battle ships; but that she would be terrible to a screw ship is very questionable.

"The greatest speed ever attained by the *Merrimac*, under steam alone, was *seven knots per hour*, and this was under very favorable circumstances. Her average steaming speed is much less than this.

"Now it cannot be doubted that the armament and great bulk of this frigate, of near 3,500 tons, would sink into insignificance before the well-plied raking broadsides or occasional plumping shot from such ships as the *Imperieuse*, *Euryalus*, OR ANY OTHER OF OUR LARGE CLASS SCREW FRIGATES, ALL OF WHOM STEAM WITH EASE FROM TEN TO TWELVE KNOTS AN HOUR. They would go round the *Merrimac* as a cooper would round a cask, and plant a shot here and there with great effect,* and with impunity to themselves.

"Speed is as needful as heavy metal; and unless a ship is cased with impenetrable plates, her success in action must principally depend upon the celerity of her evolutions. We shall see how far the engineering abilities of our cousins are likely to vie with those of the Watts on this side of the ocean, by their further attempts at improvement; but hitherto we do not find them in the ascendancy in that particular branch."

[For the United States Nautical Magazine and Naval Journal.

THE SCREW PROPELLER.

BY ALBAN C. STIMERS.

THE subject of screw propulsion appears to me to be governed more entirely by the direct application of simple scientific principles, than any other to which the attention of marine engineers has been directed. Notwithstanding this, together with the fact that it has engaged their liveliest attention during twenty years, it has always been treated empirically by all who have written upon it. It is true that certain dogmas have been promulgated by writers, and these dogmas have been partially received, but having been based entirely upon experimental data, it is not surprising that they are neither borne out by sound reasoning or the multifarious exigencies of actual practice. One consequence of this want of attention to first principles is, that nearly every screw which an engineer meets is a curiosity, being different in character from any which he has before seen. Nearly every engineer who has given his attention to the subject differs from every other, and each, having no solid foundation for his own views, is constantly changing them.

In the first place, writers upon steam propulsion generally have taken an erroneous view upon the subject of propelling in a yielding resisting medium; and this error has led to countless others, and vitiated and retarded the approach to excellence of both paddle wheel and screw to a very serious

* Wonder if they would hit that stern-post!

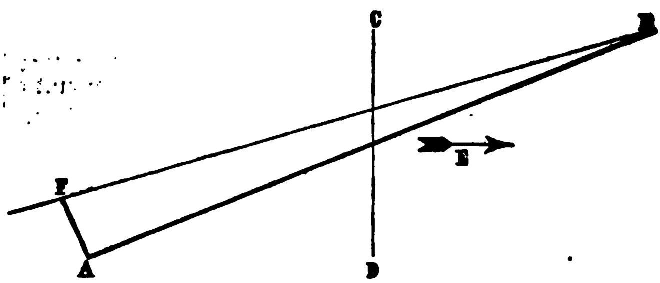
extent; and although some of our most sound and able engineers have freed themselves from the sophistic logic of such men as Bourne and Isherwood, those who have written have clung to the error.

I refer particularly to the dogma that "there is a loss by the slip of any propelling instrument which is equal to the per centum of the slip itself." The fallacy of which is most forcibly shown by taking the case of a steamer standing off from a lee shore in a gale of wind, which is so strong that, with the exertion of her whole power, she is just able to maintain her position, her propelling instrument, of course, slipping 100 per cent. According to these writers she might as well stop her engines.

When a retrograde movement is given to water by any power contained in a floating vessel, the reaction of the resistance encountered by creating this movement, causes the vessel to move forward. The forward movement of the vessel is not, therefore, caused by the *direct action* of the power; it is the *reaction*, the power being exerted solely in giving motion to the water. Now, if a given body of water be moved with a certain velocity in any direction, it will create a certain resistance; and if the amount of water and its velocity remain constant, the resistance will also remain constant; and as action and reaction are always equal, the reaction, or force which impels the vessel, will also remain constant; if, therefore, in the supposed case of the steamer on a lee shore remaining stationary, her propelling instrument is moving a body of water whose cross section equals her propelling area, at a velocity of three knots an hour, she is exerting a force, the reaction of which is equal to that of moving this body at that velocity when the wind was calm and the sea smooth. It is argued that power is measured by the pressure multiplied into the space through which the pressure acts; and that as, if the propelling instrument slips, it is required that the same pressure has to act through a greater space, and again, as with a fixed pressure, the power is proportionate to the space through which it acts, the loss by slip is proportionate to the slip. Now, it is just as easy to prove that there is a loss of power by the recession of the vessel in one direction, as it is that there is a loss by the recession of the water in the opposite one. Take the case of the vessel, again, in the gale of wind. When the vessel is stationary the power acts with a given pressure, through three miles an hour; but when the wind dies away the vessel moves, and the power has to act through perhaps twelve miles an hour, to keep up the same velocity of water, and, consequently, the same thrust. The truth is, that although one of the foregoing modes of reasoning is just as correct as the other, both are entirely wrong, as is clear to the commonest understanding, when untrammelled by the subtleties of fallacious reasoning. I shall revert to this again in its proper place, and endeavour to demonstrate that there is no loss of power whatever, either by the recession of the water acted upon by the propeller, or by the recession of the vessel, in consequence of this action.

The object of placing steam-power in a vessel is to move it forward; but as this is obtained by the *reaction* of the movement of the water backward, the attention of the engineer should be directed entirely to this backward movement; and as power is always expended in the direction taken by the resisting body acted upon, that direction is in this case that taken by the water; and if we could employ a propelling instrument which would move the water in a direction exactly contrary to the desired motion of the vessel, and be unobjectionable in other particulars, we would have a perfect propeller. This, however, has never been done, nor is it probable it ever will be, because whatever instrument is used must of necessity move in one direction with the vessel, while it is giving motion to the water in another, as nearly contrary as possible coincident with its advantageous advancement.

I will endeavor to show the direction which the water takes when acted upon by the blade of a screw propeller. Let A B, in the following diagram,

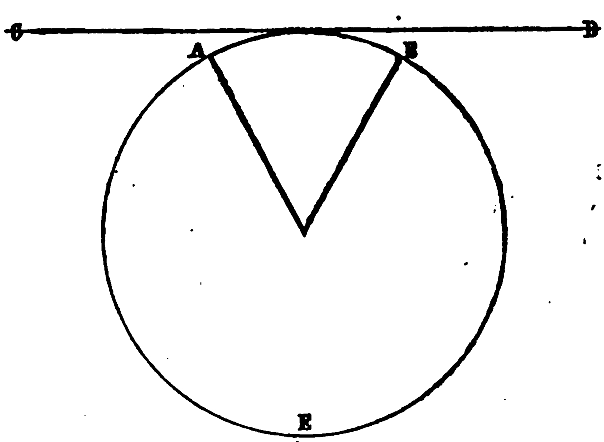


represent the blade of a screw propeller, of which C D is the axis, the screw revolving in the direction of the arrow E. Now, if the screw made exactly one revolution while the ship advanced a distance equal to its pitch, the point B. would have passed through the line A. B. As, however, there can be no propelling effect when there is no recession of the water, or slip, the vessel will not advance a distance equal to the pitch at each revolution of the propeller, and the point B. will have passed through some line F. B., and the water which was at F. has been moved by the passage of the blade to A., through the line F. A. Now the question is, what is this direction F. A., relatively with the blade, or what is the angle B. A. F?

When a solid is moved longitudinally through water, the friction of the surface gives motion to a thin film of the fluid; but as this does not affect the direction of the *body* acted upon, it is of course left entirely out of consideration in the present inquiry, and we are to suppose, for the moment, that there is no friction. Now, if the blade A. B. was to be moved horizontally through the water, at right angles to its surface, there would be no influence whatever to give the water any other direction than that taken by the blade; and if, while the blade is moving, as above, it shall commence to move also in the direction of its surface, there would be nothing in this to change the

direction of the water, and it would consequently continue to move on at right angles to the blade. This is exactly the manner in which the screw blade acts, and consequently B. A. F. is a right angle. When the U. S. steam frigate *San Jacinto* was on her trial cruise in 1854–5, she broke all the blades from her three-bladed screw, one by one; and as we ran under steam and sail about 8,000 miles with the one blade, a fine opportunity was presented to watch the effect of the blade upon the water, no confusion being created by numbers; and as we crossed the Atlantic just to the northward of the "trades," and afterwards steamed up through the West Indies, we had very clear, smooth water, which enabled us to see the keel of the vessel from the spanker boom, almost as plainly as though the ship had been in dock. The observations then made confirmed, as far as such observations could do, the above reasoning.

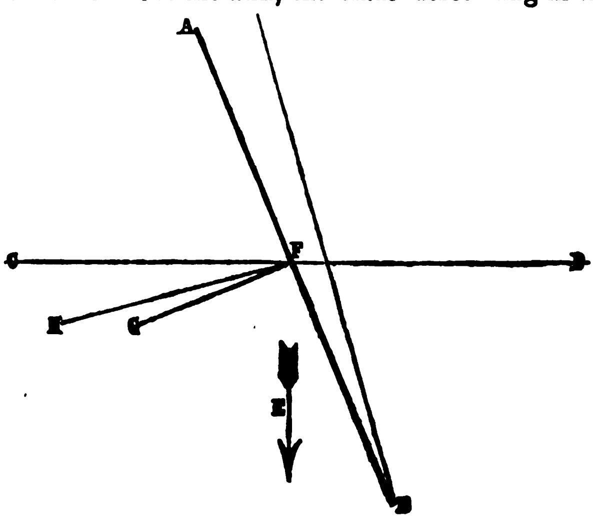
Patents have been granted to men for giving a curve to the blade, radically to prevent a supposed loss by centrifugal action; but no loss can be sustained from this cause unless the water recedes from the centre outwards. During the passage of the blade from A. to B., in the following diagram, there is a slight elevation of the water above the surface C. D., because there is nothing but the weight of the water moved to resist the centrifugal force; but during the passage of the blade through the remainder of the revolution B. E. A., the surrounding water prevents that within the screw from receding tangentially. This could also be clearly observed from the spanker boom of the *San Jacinto*; and if any one desires to satisfy himself without the trouble of going to sea, let him take a model of a screw propeller, and hold a lighted candle to its periphery while it is in revolution; he will find, instead of the blaze being blown *from* the centre by the air upon which the blades are acting, it will be drawn *towards* it; and if he will turn fast enough he can blow it out. It is probably from having observed the rising between the points A. and B., in the foregoing diagram, in the shallow muddy water of canals, etc., that the erroneous idea was conceived of there being a necessity for counteracting the centrifugal force, this rise being more marked in light drafts and small diameters, and



muddy water preventing the eye from detecting the state of things during the other portions of the revolution.

When the blades are descending or ascending there is a slight deviation from the law of moving at right angles to the surface, as in giving a downward motion to water already below the surface, it is necessary to displace horizontally that which is underneath, which again is required to elevate that which it replaces. The resistance to a downward motion is, therefore, greater than a horizontal one, which again is greater than the upward, because in this last the one simple movement of the elevation is the only one required.

In the accompanying diagram, A. B. is the blade of the screw, of which C. D. is the axis, the blade descending in the direction of the arrow

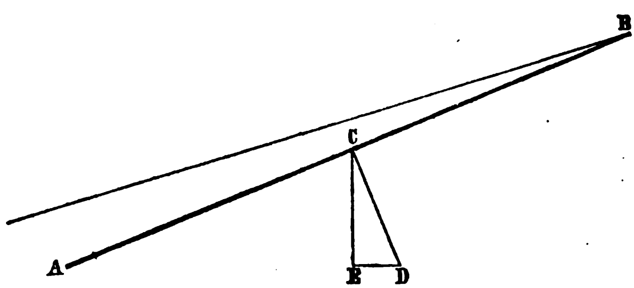


E., the water will not move in the direction F. G. at right angles to the blade, but will, instead, take some direction, F. H., more nearly horizontal and coincident with the axis. The most efficient portion of the revolution is, therefore, when the blade is descending. On the other hand, when the blade is ascending, the contrary of this obtains, and we sustain the same loss relatively with the horizontal portions of the revolution that we have gained during the descent. We have, therefore, a mean, which is equal to that which obtains when the blade is moving horizontally. We may, therefore, consider the water as moving at right angles to the blades, during the whole revolution and in concentric circles.

The fact of the blades breaking short off at the hub on the trial cruise of the *San Jacinto*, before referred to, enabled me to mark the effect of the change in our propelling surface, in the proportion of three, two, and one, upon the revolutions of the engines and the slip. I found that the revolutions of the screw increased in an inverse ratio with the cube root of the surface, and the slip increased in an inverse ratio with the square root of the surface, the speed of vessel and power applied supposed to remain the same. From this we can deduce that, with the amount of surface remaining constant, the revolutions would increase in the same ratio with the cube of the power, and that the slip would increase in the same ratio with the square

of the resistance. That is to say, the resistance to both the revolution and the recession of the screw, is as the square of the velocity, and the power to overcome each of those resistances is as the cube of the velocity. My observations in the *San Jacinto* serve to prove, therefore, that in those two directions the power to create velocity with the screw propeller, follows the same laws which are said to govern the velocities through fluids of plane surfaces in general.

We come now to a very important point, viz.: that of ascertaining the propelling efficiency of different angles of the blade with the axis; or, in other words, of different ratios of pitch to diameter. In speaking of the diameter in this connection, we should always have reference to the diameter at the centre of effect. This is increased or diminished by changing the shape of the blade, or increasing or diminishing the diameter of the hub, while the diameter of the screw remains constant, the obliquity of the blade with the axis being a mean of the total obliquity, at the centre of effect. If the blade A. B. moves the water in the direction and with the velocity C. D., the application of the power may be resolved into the two directions,



and velocities C. E. and E. D. Now, in obtaining the velocity C. D., we have expended our power beneficially, as that is in the exactly opposite direction in which our vessel is moving; but the power which has been expended in creating the direction and velocity E. D. has been of no benefit whatever, and is, therefore, totally lost. Now, C. E. is the measure of the backward movement of the water or slip, and E. D. is the measure of the impingement of the revolution of the screw, and we have seen that in both of these directions the expenditure of the power was as the cube of the velocity. The whole power expended upon the screw may therefore be represented by $C. E.^3 + E. D.^3$; and the per centum of the loss of power by the oblique action can be obtained by the formula

$$\frac{100\ E.\ D.^3}{C.\ E.^3 + E.\ D.^3} =$$

loss by the oblique action of the blade, and as in any screw the circumference of the centre of effect has the same ratio with the pitch that C. E. has

with E. D., this formula is very easily applied when the diameter of the centre of effect is known.

It is the common practice of engineers to consider the ratio of the pitch and the diameter of the screw, two terms which have no necessary connection with each other, except in similar screws, while if the amount of pitch be considered in reference to the diameter of the centre of effect, we will have something tangible. Screws are now made with pitches varying from an equality with the diameter to twice that amount. To exhibit clearly the great loss by oblique action when using high pitches, I have appended the following table, showing the per cents. of power beneficially applied, and the per cents. of loss by lateral thrust, with screws varying in their pitches from 32 to 16 feet, and of 16 feet diameter, of uniform pitch and uniform length, having hubs 18 inches diameter; this will give a diameter of centre of effect of 11.38 feet, the circumference of which is 35.76:

Diameter of Screw.	Diameter of the Centre of Effect.	Pitch.	Ratio of Pitch to Diameter of Screw.	Ratio of Pitch to Diameter of Centre of Effect.	Per cent. of Power lost by Oblique Action.	Per cent. of Power beneficially applied.
Feet.	Feet.	Feet.				
16	11.38	32	2,000 to 1	2,812 to 1	41.75	58.25
16	11.38	31	1,937 to 1	2,721 to 1	39.46	60.54
16	11.38	30	1,875 to 1	2,630 to 1	37.12	62.88
16	11.38	29	1,812 to 1	2,548 to 1	34.78	65.22
16	11.38	28	1,750 to 1	2,459 to 1	32.43	67.57
16	11.38	27	1,687 to 1	2,372 to 1	30.09	69.91
16	11.38	26	1,625 to 1	2,284 to 1	27.76	72.24
16	11.38	25	1,562 to 1	2,196 to 1	25.46	74.54
16	11.38	24	1,500 to 1	2,109 to 1	23.21	76.49
16	11.38	23	1,437 to 1	2,021 to 1	21.01	78.99
16	11.38	22	1,375 to 1	1,933 to 1	18.81	81.12
16	11.38	21	1,312 to 1	1,845 to 1	16.84	83.16
16	11.38	20	1,250 to 1	1,757 to 1	14.88	85.12
16	11.38	19	1,187 to 1	1,669 to 1	13.04	86.96
16	11.38	18	1,125 to 1	1,580 to 1	11.11	88 89
16	11.38	17	1,062 to 1	1,493 to 1	9.70	90.30
16	11.38	16	1,000 to 1	1.406 to 1	8.22	91.78

FISHER'S IMPROVEMENT ON STEVENS' CUT-OFF.—J. K. Fisher, of this city, has drawn our attention to a new method of operating the cut-off in marine steam engines. His combination is believed to be new. It consists of the combination of Stevens' rock-shaft with the link motion, which will vary the period of admission without changing the lead. For a sea-going steamer, with two engines, he proposes to apply the links directly to the rock-shafts, as in the locomotive. For a single engine, that has to be started and backed by hand, he would apply the link to the suspending rod, that is now used [illegible] end of the eccentric. It is not designed to *give* this plan to the public, [illegible] that engineers desiring to adopt it to join him in testing its value, practica to a joint interest in the patent. Address him at 234 East Broadway.

ABSTRACTS OF FOREIGN PATENT LAWS.

Great Britain.—Patents for inventions under the *new law*, as amended by the act of October 1st, 1852, and now in operation, includes the United Kingdom of Great Britain and Ireland in one grant, which confers the exclusive right to make, use, exercise, or vend. This is conceded to the inventor, or the assignee, for a period of fourteen years, subject to certain conditions hereinafter explained. At or before the expiration of the third year, additional fees and stamps, amounting to £50, or $250, are payable; this extends the term to seven years.

At or before the expiration of the seventh year, £100 or $500, becomes payable, which completes the term (fourteen years) of the patent.

Care should be taken by patentees, who wish to continue their patents, to pay these fees in accordance with the above requirements, or the patent will be null and void.

The purchaser of a patent would assume the payment of the fees.

France.—Patents in France are granted for fifteen years, upon condition that the patentee pays annually 100 francs, or $20. This must be paid punctually on or before the anniversary of the date of the patent.

A patent must be put into practice within the first two years of the patent, and the article made in France, or the patent would be null and void according to law.

Belgium.—Patents in Belgium are granted for fifteen years; there remains to be paid, on or before the expiration of two years of the patent, £31, or $155. The patent must be put into exercise within the first two years of its existence.

Holland.—Patents are issued in Holland for fifteen years; within eighteen or twenty months from the date thereof, 600 florins, or about $160, must be paid.

It is always best to put the patent into activity within two years from its date; if this is neglected, the patent is not immediately nullified.

Austria.—Patents in Austria are granted for fifteen years; there will remain to be paid $10 per year, for the last ten years of the patent.

Spain.—The duration of the patent of introduction is five years. It can usually be prolonged for an additional five years. It must be put into active use within one year from its date, and it must not remain unemployed for any time during the existence of the patent.

Prussia.—A patent here is difficult to obtain, and is of very little value, as the law requires it to be put into activity within six months from its date.

Russia.—Patents here are expensive, and not easily secured. We do not advise inventors to apply for patents in Russia or Prussia.

The foregoing instructions are very important to owners of foreign patents, as a non-compliance with the legal requisitions will usually invalidate a patent.

COASTING IN JAPAN.

VOYAGE OF THE VINCENNES' LAUNCH FROM SIMODA TO HAKODADI.

In the month of May, one year after the visit of Commodore Perry to Japan, the Vincennes, flag-ship of the North Pacific Surveying and Exploring Expedition, entered the port of Simoda, one of the two ports opened to American vessels by the treaty of Kanagawa.

The object of Commodore Rodgers, who commanded the expedition, was the prosecution of a survey already embracing the dependent islands south of Japan, among them Ou Sima, an island abounding in fine harbors, hitherto unknown. It was naturally inferred that there could be no objection on the part of the Japanese to this examination of their coast, for without it the article of the treaty which permits American vessels in distress to enter any of the ports of Japan, would be a mockery.

It is essential that the navigator should be furnished with properly constructed charts, and know where to find and how to enter a harbor of refuge, when one is required. It is probable, however, that the Japanese, satisfied with their own primitive and imperfect charts, had not thought of this necessity.

That they might not be surprised, Commodore Rodgers had, during his northern cruise of the winter of 1855, entered the Bay of Kago Sima, which lies at the southern extremity of Kiu Siu, and thence despatched a communication to the government of Japan, informing it that in the succeeding spring several surveying vessels would make their appearance on the coast, and that he hoped they would meet with no opposition to their work from local authorities, or from the people of Japan. It was supposed a reply would be received on the arrival of the vessels at Simoda, but such is not the policy of that government, and the letter remained unanswered. A second communication was despatched, and the Commodore remarked that it would be desirable to send a boat from Simoda to Hakodadi, in order that the shore line, and such harbors as could not be conveniently entered by a large vessel, without charts, might be examined. To remove any feeling of distrust, it was proposed to take any Japanese who should be appointed by the government to accompany the boat, as interpreters, and observers of the character of the survey. In addition to this, copies of the charts to be made were promised them. No direct reply was received to this offer, and as the principal object of the expedition still remained (the survey of Behring's Straits) to be accomplished, while the summer rapidly approached, the Commodore decided to send the boat, in anticipation of a favorable answer.

The eastern coast of Niphon was comparatively unknown; from servations of various navigators who had passed within sight o points or conspicuous peaks, the outline of a chart had been fc was completed by interpolating the rude curves delineated by t

Such was the method adopted by Siebold; but the essential portions, the depth of water, character of bottom, and sketches of the land, by which navigators recognize particular harbors, or parts of coasts, were wanting.

The expedition determined upon, a sheltered place was sought for in which to moor the boat, while the carpenter and his crew fitted her for the voyage. Such a place was found on the southern side of the Bay of Simoda, for there rises a rocky islet an hundred feet in height; against its precipitous front the sea breaks, while its opposite side, tree and grass covered, slopes down to the margin of a sheltered cove, shut in from all the winds and waves. The entrance is within the bay, and the little channel that separates the islet from the main, is not more than two or three feet in depth, few more in width, and winds tortuously among the rocks. It is a favorite resort of the Japanese, and there are always several of their junks moored there, for the purpose of repairing them, or for a quiet anchorage during their long stay in port.

On the islet, beneath the trees, and opposite to a band of Japanese shipwrights, our carpenters put up their benches and established themselves. There was a singular and pleasing contrast presented by the people of the two nations and their work. The elaborate and tedious labor of the Japanese, careful and exact, but ill directed, requiring a high degree of dexterity to produce an inferior result, was exemplified in their well built but unwieldy vessels, which, by the principle of their construction, invite wreck, while all the ingenuity of detail is directed to defence.

On the other side, the Americans, attaining their object by the readiest means, developing every advantage that appears, finally putting out the result of their labor in the form of a miniature sloop, with all the appointments of modern improvement, to compare with the latticed work, high sterned junks, of primitive sail and enormous rudder.

The Japanese watched with curious eyes the proceedings of the Americans. In addition to poop and forecastle, covering six feet forward and six aft, iron stanchions, eighteen inches in height, were fitted to the rail; to a rope passing through them was laced a painted canvas weather-cloth or bulwark, giving a foot and a half more height of side without much increase of weight. This was necessary, for when freighted, her true gunwale was only fourteen inches above the water. She was well furnished with canvas, spreading in all an hundred and sixty square yards—certainly sufficient for a boat twenty-eight feet in length and seven and a half wide.

The crew, composed of picked volunteers, numbered twelve; a carpenter, an armorer, sail-maker and cooper, each provided with the essential tools of his craft, were among the number. The command was assigned to Lieut. Brooke, who was assisted by Mr. Kern, the artist of the expedition, and Mr. Berry, sail-maker of the Vincennes. The number was large, in proportion to the capacity of the boat. It must be remembered, however, that

there was much doubt as to the character of the reception to be anticipated; and there might be also on some occasion a necessity for beaching the boat, when a large force would be required. Arms of all kinds were provided—pikes, cutlasses, pistols, carbines and rifles, with a sprinkling of revolvers and a twelve-pounder brass howitzer or Dahlgren, as those excellent pieces are familiarly termed, for which there were eighty-five rounds of shrapnel and canister. Thus equipped, too weak to be aggressive, but strong enough to resist attack, the respect of the Japanese was ensured.

There was a full supply of astronomical and nautical instruments, including two excellent chronometers, and an azimuth compass, properly fitted in its binnacle. She carried rations for fourteen days, and it was presumed that abundant supplies could be procured on the coast.

On the morning of the 28th of May we stood out to sea. The Vincennes was already under way, standing out under her topsails. The sea was rough and irregular, for the currents of this part of the coast are compressed by islands, deflected by points, and not unfrequently cause breakers in deep water, which are termed by seamen "tide-rips." We therefore contented ourselves with a few rounds of angles, and having weathered Cape Diamond, ran along the shore to a port, visible from the hills near Simoda. As we stood towards it, we saw the Japanese gathering on the shore. A few houses of some pretensions are grouped near this port, which is only suitable for boats. A reef of rocks, forming a semicircle cut by a channel, affords protection from the usual swell of the sea. We entered, and anchored in two fathoms water; as our boat was heavily laden, and it was an object with us never to permit her keel to touch the bottom; a grapnel was thrown among the rocks of the shore, and by it we hauled in. The inhabitants, who did not at first comprehend our proceedings, were highly amused, and laughed immoderately. To our signs that they should launch one of their small boats and come to us, they made no reply; but one, more forward than the others, waved us off. Four of our crew sprung on shore, and seizing one of their boats, brought it alongside; a portion of them were then landed—they kindled a fire, and prepared a temporary shelter of tarpaulins for the night. As we were in the vicinity of Simoda, and were not altogether strangers to the people, we walked through the village, and visited several small farms in the neighborhood. The farm-houses were commodious and neatly kept; to each was attached a granary, raised several feet from the ground. The people seemed to be very industrious; in all the houses we found females, and most of them were engaged in spinning. In the sun were drying heaps of beans, seaweed and grain; shells of the haliotis, of the turbo, and of a muscle of large size, were piled or scattered on the ground. Th[illegible] sh[illegible] are highly esteemed as food. There were very few men in the hon[illegible] that we met had a book containing colored sketches of nati[illegible] knew the names of nearly all the nations, and requested Mr.

them in English under their respective flags, which he did, much to the gratification of the proprietor. There was, on the part of the women, only, a timid reserve, such as is usual with the youthful and modest of the sex in the presence of strangers.

A daguerreotype of one of our countrywomen was shown to these damsels of Japan, and in a moment the most persuasive signs were made, by those who had not seen, but desired to see the picture. The curiosity of the proprietor of the book of flags was roused, and he became very indignant at not being permitted to see, and assuming an air of authority, intimated to us that we should leave. We only laughed at him, and finally he laughed too, but could ill conceal his chagrin, for the young girls were evidently jesting at his expense.

There is a rivulet of excellent water running through the village, and we saw on its bank a rude pounding machine, moved by the stream. A long trough, balanced, which filling tilted down, struck a blow, emptied its water, and rose to be again filled.

As we returned to the boat, we saw smoke or vapor rising from the crater of Oho Sima, the great volcanic island which parts the entrance to the Bay of Yedo. At sunset the weather was fine; seven of our men slept on the shore, and five remained in the launch, all but the watch beneath the tarpaulins. At midnight we were awakened by a boat from the shore, paddled off by one of our men, who stated that his comrades were being annoyed by officials, who insisted upon their going off to the launch. Such a change in our plans was not agreeable, and as the seaman said that he thought they could sleep through it, he was directed to return, and to pay no attention to the intruders. This nonchalance was so displeasing to the functionary in chief, that he became quite emphatic, and gesticulated with expressive energy; finally, wrought up to a high pitch of excitement, with a blow of his fist he demolished his paper lantern, and, accompanied by his subordinates, retired.

At an early hour in the morning the interpreter, Totsnosky, accompanied by another officer, came alongside; they were just from Simoda, and were dressed with more than usual care. The former inquired whether we were from the Vincennes, and if we came to make a chart. Mr. Berry was directed to reply. Then Totsnosky asked if we wished any provisions—offered us some sweet potatoes and other vegetables. We accepted the offer, and they then went on shore as if to order them. Soon after they returned with two boats, and Lieut. Brooke received them. Totsnosky, apparently directed by his companion, opened the conversation by inquiring why we anchored. He was informed that we came in consequence of unfavorable weather; that we were looking for dangers in the way of vessels cruising on the coast, and harbors for them to run into in cases of distress; that the Vincennes was at sea, on her way to Hakodadi, and that the launch would proceed along the coast. He said, "It is not in the treaty."

We replied, that by the treaty we could go from Simoda to Hakodadi, and that we had a right to enter any port, when in distress, and to procure provisions. This he admitted; but said that the Governor of Simoda had not given us a letter to the authorities of the coast, because he did not think our voyage in accordance with the treaty; that otherwise, he would have directed the inhabitants of the coast to supply us with provisions, and to receive us kindly; that we might meet bad people of Japan, and have trouble if we went into port. It was replied that Commodore Rodgers also thought that we might have trouble, as there were bad people in Japan as well as in other countries, and he therefore informed the Governor of the intended voyage, to enable him to guard against it; that in consequence of not having such a letter, the boat went heavily manned and armed; of this he had the evidence before his eyes. He regretted the trouble to be anticipated. We assured him that he need feel no uneasiness; that we were able to take care of ourselves, and any bad, interfering Japanese, would be punished to his and to our satisfaction; that we were ordered to Hakodadi and were going there. He remarked, "It is a small boat, and there is great danger in going to sea in it." We replied, that if in distress, we would run into port. The idea that, from the small size of our boat, we would often be compelled to seek shelter in port, seemed new to Totsnosky, and he was undetermined what course to pursue; at length he proposed that we should wait until he could see the Governor of Simoda; and, as nothing is done frankly or candidly in Japan, he asked if we would wait for a letter from the Governor to Commodore Rodgers. As the Vincennes had sailed but the day before, we inferred that this proposition was made to detain us until he could have an interview with that functionary. We replied that we could wait two hours for a letter from the Governor, recommending us to the hospitable attention of the Japanese of the coast, but no longer. He then asked if we would wait until he could see the Captain of the Hancock, then at Simoda, and about to sail. We replied, No! He seemed inclined to procure a letter from the Governor of Simoda, but we had not time to await the decision, which might not be favorable. He then said, "I will go on shore and procure such provisions as you desire;" and, being furnished with a list, left in pursuance of that object, saying, "this town of Sino Hama, so named from the white sand of its shores, is not within the jurisdiction of the Prince of Idzu, therefore it is necessary to make a representation to the authorities;" or, as he expressed it, to the prince of the district. At this moment the Hancock appeared, standing out from the harbor of Simoda. We followed him to the shore, and entered into familiar conversation. Expressing some surprise that the houses of this town, which is much smaller than Simoda, should be larger and more commodious than those of that city, he re "Ah, you should have seen Simoda before that terrible storm!" the earthquake which had recently destroyed it. He then sp

voyages, and we told him that before the lapse of many years, steamers of vast size and prodigious speed would pass the shores of Japan, with passengers and cargoes of goods; that then the globe would be encircled by a line of steamers, so that one might leave Japan, and in eighty days return, having accomplished its circuit in that short time. We inquired why it was that Japan, now brought in contact with the busy people of the world, did not send to America and Europe some Japanese of talent to travel, and return to inform the Emperor, and the high officers of the empire, of the condition of those countries. He replied, "It is thought of." We then embarked, waved an adieu to Totsnosky and his companions, and again put out to sea.

It was eight o'clock when we weighed the anchor, and a gentle breeze blew from E. N. E.; the clouds were light and feathery, the sea smooth, and no weather more favorable for surveying purposes could be desired.

The scenery of all Japan is picturesque, and that of Sino Hama forms no exception. A precipitous bluff of rock, crowned with oak-like trees, gnarled and grotesque, projecting beyond the curving line of the shore, overlooks a flat and rugged reef, forming the northern barrier of the port; a few rocks, overwashed by the larger rollers, form the southern. Houses scattered among the hills appear above the trees, and narrow lanes, with high walls overgrown by vines, wind all about.

We ran towards the volcanic island of Oho Sima, the largest of the group, off the Bay of Yedo. We made rapid progress until the most conspicuous of the landmarks about Simoda were plainly in sight, enabling us to connect, by our observations, those well determined positions with such peaks, points and islands to the north, as our new position enabled us to see; thus begining a system of triangulation, which we hoped to extend even to the northern extremity of Niphon.

It is needless to mention more of the system which we pursued, than that determining several positions off the coast in this manner, and cutting in new objects with the sextant, keeping a careful account of our distances run by patent log, of courses, by azimuth compass, of which the variation was determined on every course, by repeated observations for the time and the latitude, and the astronomical bearings of peaks or points, we were enabled to continue our line of survey. And it happens, from the peculiar character of the country, presenting always remarkable and elevated peaks, that we could, day after day, see and observe the same points, thus checking our work, and continuing the astronomical observations for latitude and longitude.

We had, from the hills in the vicinity of Simoda, seen vast columns of vapor rising from the crater of Oho Sima; and we now observed that its summit presented the appearance of a double crater—one perforated cone within another—the inner one rising but little above that surrounding it.

It is abrupt to the southeast, but its western declivity slopes gradually to the sea, terminating in several gray bluffs, of which the strata dip to the southeast. We saw upon this slope extensive cultivation. Creeping along the southern shore of the island, were twenty-seven of the large Japanese junks, all sailing towards the Bay of Yedo. At noon the wind left us, and we were perfectly becalmed; the sky without a cloud, the sun shining resplendently, and the sea of a deep and transparent blue, rivaling the sky in purity; the outlines of all the land severely clear. A powerful current swept us to the north; the bearings of the land changed, as if we were moving under the influence of a brisk breeze. In an hour the wind again began to blow, but from the south, and spreading all canvas, we moved rapidly on our course to the northeast, making directly for the Bay of Yedo.

The speed of our boat and her course soon brought us near the long line of junks, now increased to thirty, and it was amusing to observe the gradual changes made in the courses of those nearest us, who seemed disposed to hold aloof, and to leave their neighbors to our attention. It is not singular, however, that they should be suspicious of an object so strange to the waters of Japan, as a boat crowded with bearded men, bristling with arms. We came close to them; they looked at us in surprise as we drew by, but asked no questions; so, leisurely passing them, we came into the wake of the largest and the fastest, and there we remained, sailing close after her. The clustered heads of the Japanese crowning her taffrail, reminded us of the ornamental work which sometimes adorns the arched portal of a fortress. Thus we followed her. At length we perceived through the misty light, which resembles that of the evening skies of Italy, on the shores of the Mediterranean, the form of land bounding the outer Bay of Yedo. On our starboard bow a wooded point, beyond it another, and then a double peaked mountain, of peculiar and graceful outline; beyond that a succession of points, receding and fading away in the distance, fringing the eastern shore of this magnificent bay.

On our left rose the great Fudzi Yama; a mountain of such proportions as to excite the admiration of all who behold it; its sides rising gradually up, meet at a height of more than 9,000 feet. To the Japanese it is sacred; they make pilgrimages to its shrine; its form is their line of grace and beauty, and it presents itself in every aspect as the chief ornament of their pictures and their wares. They represent it in gold, and they mantle it with glittering silver for snow. It is the key of the earthquake power, and the clouds pause on its summit to announce the approaching typhoon. To it the eyes of the Japanese seamen turn at the distance of an hundred miles, at the rising and the setting of the sun. There is not in the world a mountain-form that combines such massive grandeur with such fair sweeping o[illegible] On it the eye delights to dwell, and its contemplation excites a [illegible]tive emotion of pleasure.

Having approached the harbor of Yedo, we longed to enter, but it was sealed to us by the treaty, and we turned reluctantly from our course, and hauled up for the eastern shore of the bay, to find an anchorage for the night. The moon, nearly full, silvered the water; the launch ran merrily towards the shore; but the wind changing, forced us to enter deeper still the bay. A black, abrupt bluff rose before us; we heard the hollow sound of the eddying tides winding about its rugged base, and mingling with it the sound of voices. A glance through a night-glass revealed, in the shadow of this bluff, a fleet of more than an hundred boats. It occurred to us that it might be that they were stationed there to intercept us, for the government has at its command countless boats. The helm was put up, the crew handled their arms, while unobserved we moved noiselessly away.

Again turning towards the land, we sounded, but found no anchorage until within a cable's length of the shore, then we dropped anchor. With the sails simply stopped, to be spread at a moment's notice, the gun was cast loose, and everything prepared for defence; we spread the tarpaulins, set the watch, and lay down to sleep, or to dream strange dreams of volcanoes, blood-red suns, silver moons and mists, eastern emperors and guards, mingled with flashing gleams of familiar faces far away.

At daylight the wind had hauled to the east, and was fair. Numerous fishing boats were hovering round us, but the fleet observed the preceding night had disappeared; it was probably composed of fishing boats that supply the City of Yedo. Our visitors, who wore the loose gowns of Japan, were not disposed to venture very near; but appealing to them as fishermen, by exhibiting our hooks and lines, and intimating that we wished them to give us bait, they approached sufficiently near to pass to us, in their long-handled dipping nets, some minnows. As we thanked them, and threw into their boats some steel hooks, which are highly prized, for theirs are of bronze or copper, their manner became less distrustful and more cordial; to their minnows they added mackerel and perch, and as we got under way and stood out they followed, throwing fish from a distance into the boat.

As the wind freshened, blowing down the bay, we almost regretted that we had not in the night stolen up to the City of Yedo; for, with the fresh and favorable wind, we might have hovered like a phantom off the city at dawn, and vanished at will. That would have been but a rash exploit, and doubtless serious offence would have been taken by the government. We ran out into the middle of the bay, and soon obtained all the data necessary to an outline of the land, already connected with that of Simoda by our observations of the preceding day.

Directing our course towards the eastern point of the entrance, (Susake,) we found there a fine spacious harbor, of easy access, the water deep, and the holding ground of blue mud. Its entrance is to the west, and the opposite land, though distant, forbids a heavy sea. A village is located at the

extremity of the bight, and several large junks were lying at anchor near the shore. Losing the wind in this bight, we turned and ran out into the open sea, passing Point Susaki at the distance of a quarter of a mile; on it we observed a battery of five embrasures, from which a ship might be annoyed, if guns of large calibre were employed. Off the point a strong tiderip tossed us about; the water broke violently, but with good fortune we shipped none of it. From these tide-rips more danger was apprehended than from any other source, for in them small vessels become unmanageable, and the sea boils like a cauldron; the waves rise so confusedly, that however buoyant a boat may be, she cannot ride them. The roarings of these whirling, dashing waters, may be heard at the distance of several miles; nor are they dependent on the winds, for it may be nearly calm—so little wind as scarcely to fill a sail—they are then even more to be dreaded than when, with a moderate breeze, the vessel has speed enough to clear the currents which sweep towards them; they are stationary, and in a good breeze may generally be easily avoided. Our course led us along the coast of Awa, to the eastward, at the distance of half a mile from the shore; but the wind, which favored us in doubling Point Susaki, now came ahead, the sea became rough and irregular, a strong current opposed us, and after struggling several hours, we found it impossible to weather Cape King. We found refuge in a boat harbor, partly natural and partly artificial; the sides of a rocky cave, neatly hewn into miniature basins, and jetties of solid rock, each sufficiently large to accommodate two or three boats. Dropping an anchor, we hauled stern in to one of the basins, and secured the boat to the little jetty by a line. Our attention was first drawn to this port, opening to the west southwest, by the masts of some junks lying in a larger harbor formed by a reef of rocks, its entrance to the south. A point of rocks separates the two harbors, and where it juts from the main there rises a round and verdant hill, upon which stands a temple, surrounded by trees, and fronted by wooden arches spanning the path that leads to it; a blue flag, bearing an inscription in what appeared to be Chinese characters, was flying from a pole near the arch. On a low plain, bounded towards the sea by these harbors, stands the village; it also is named Sino Hama. The hills in the rear are cone like, terraced for cultivation, and clothed with a luxuriant growth of trees. The fishermen whom we met at sea had waved us into this port, and we did not doubt but that we should meet with a kind reception. The inhabitants came down in crowds, until the flat rocks were covered with men, women and children.

(To be continued.)

NOTE.—An invoice of Japanese goods is offered for sale at auction, November 28, in New-York.—EDS.

SHIPS OF WAR—PAST AND FUTURE.

From the time of Alfred, the founder of the English monarchy, down to the commencement of the late European war, the Navy had been regarded as the right arm of Britain's defence. At the opening of the late conflict with Russia, her wooden walls were regarded as the *vade mecum* of national power; the number had not only been greatly increased, but steam had infused life into the old, and become the propelling power of the new vessels. The prominent characteristics had been carefully preserved; the Admiralty had not forgotten to maintain the same distinction in the classes and sizes of the vessels that characterized the grades of command; and inasmuch as an elevation in rank furnished no guaranty for an increase in the knowledge of its possessor, it was not thought out of place to grade the size of ships to correspond with degrees of rank; hence we find the red, white and blue, corresponding with the one, two, and three-decked batteries, all regarded as in strict accordance with the laws of utility. In reference to speed, the point of utility appeared to have been defined in the light of an ancient discovery, that the laws of nature were in harmony with the movements of the *Navy*, particularly the larger vessels. The fact that *large bodies moved slow*, although, possibly, an indication of wisdom in the design of the universe, argued nothing for the adoption of this principle in qualifying a vessel of war. The altitude of the topsides and the rank of commission being equalized, no reduction in the number of decks could be thought of to increase efficiency. A compromise was, however, effected, by securing the services of steam to screw the hulks along at a more respectable pace.

The British nation possessed the most formidable fleet on the globe, and to add further to its power, the names of her majesty's vessels were well calculated to strike terror into the hearts of an enemy. The "Terrible" and "Devastation" were but samples of this auxiliary force, which, without a broadside, was felt to be sufficient to carry dismay to all within the range of their guns. With such a fleet, it was only necessary to give a Napier the command, and the people of continents, islands and fortresses would melt away in submissive awe. War came. The appointment was made, the fleet prepared, and royalty itself witnessed its departure to blockade the Baltic and level Cronstadt to the ground. How prolific of "experience" was this expedition! How much was shown to be unlearned by the Admiralty, and how does Sir Charles' highly wrought expressions of victorious warfare, on leaving England, contrast with his report at the end of a long term of chagrined inactivity, in which he informed the Admiralty that if England would take Cronstadt she must build another fleet! The whole nation was aroused, and indignant murmurs arose on every side, denouncing the theory of constructing navies to serve only for play-boats in the pastime of gun-decks and distinctions.

The Admiralty were compelled to ask a truce of public opinion, and admit that the navy of England must pay tribute to the "customs of *utility*" in the displacement of their vessels, which they have learned were of more importance than those of the "service." England had thus discovered, after twelve months' war, that for all the purposes contemplated, she had no Navy. She had just awoke to the realization of the fact, that a great battery *above water* invariably caused a more formidable bulkwark *beneath*; and but for the genius of private shipbuilders, the Admiralty might still have been engaged in striking a balance between weight, rank, and draught of water. Cronstadt is safe, and England has two fleets, one of heavy draught of water, which she would no doubt sell cheap, and another of light draught, *well adapted to our own sea coast*; and we would respectfully suggest, whether it were not better for our government to buy the former of England than to build frigates of 24 feet, or steam sloops of war of 18 feet draught of water. We can have the condemned ships of Napier's fleet at once, and get them cheaper than we can build duplicates.

We may now know why the people have always given small appropriations to the Navy in time of peace. It is generally believed that the history of the last war with Great Britain would be but the history of another, when the privateer service figured so conspicuously in causing the star-spangled banner to wave over English bottoms.

The great maritime interests well know that the shipping *material* of the Navy bears the mildew of decrepitude imported from England; and this general remark applies to all the grades save one, from the *Pennsylvania* three-decker down to a *Princeton steamer*—all bear the English imprint, and out of near 80 vessels belonging to the U. S. Navy, only 32 are deemed worthy of being put in commission, and it is now found necessary to build new vessels to meet our wants. Is it then surprising that the people give sparingly to the Navy? It was a wise measure of the Hon. Secretary to recommend an increase of new vessels, and not the less discreet, that which determined the description he furnished; and it would have been well if he had added genius to his counsels, to have enabled him to carry out his suggestions both in spirit and letter, giving us vessels adapted to the practical exigencies of war, for present and future time.

We have been so long wedded to "*the customs of the service*," that we have continued to allow England to think for us. She has been our text-book in all that pertains to the *material* in naval affairs, and notwithstanding there is the widest difference in the wants of the two countries with respect to adaptation, yet the American Navy is but the counterpart of that of England in more than one respect. England has an iron-bound shore, wh[illegible] entire coast is shoal, and the ports of entry, with few except[illegible] limited in the depth of water; hence the importance of adapti[illegible] of water of our vessels to our own coast at least. In this re[illegible]

is less useful than the condemned Navy of England, for we inquire, how many of the numerous harbors of our widely extended seacoast such ships as the *Merrimac* can enter, besides Boston, Newport, New-York, Norfolk, and Pensacola, drawing 24 feet water, when 16 or 17 feet would have sufficed to furnish greater speed, one of the most essential qualities in vessels of war; nor can we be entirely unmindful of the advisory counsel given the Hon. Secretary with respect to the new steam sloops of war, not to exceed 18 feet, which they would be sure to do if built by the Navy Department. 18 feet draught is too much by at least *one-third*. Heavy draught of water and speed are not commensurate—they are seldom found in the same vessel. We have imported from England the term "auxiliary," and find it a most convenient application when the vessel does not come up to the anticipated speed. The term, as applied to the British Navy, was never designed for new vessels, but only for those sailing vessels already built, which could not be driven beyond the most moderate speed. *The screw was added to save from condemnation.* The term itself implies moderate speed, which at once places a war vessel behind the age. As well might a city government expect to arrest the burglar by the efficiency of its police, while the men who compose it were, from disability, well known to the burglar unable to give chase when necessity required; nor will a Navy be more efficient with its vessels branded as auxiliaries or delinquents in speed. So far from efficiency without speed, we regard it as being quite as essential as the battery itself; and we say, without fear of successful contradiction, that there is no reason why it may not be obtained in war, in greater measure, than in merchant vessels. It enables its possessor to overtake an enemy, manœuvre, select position, or retire, if necessary. It is equally serviceable in time of peace, to chastise the outlaw, who always is found on board of the fleetest vessels; and the only reason why the freebooters of the China sea and the slavers of the coast of Africa are not annihilated, is because of the dull sailing propensities of the British and American squadrons. Were the pursuers selected from the same class of vessels from which the pursued are taken, there would long since have been an end of these piratical expeditions. Heavy draught of water, one of the appendages of dull sailing, prevents the pursuer from following in the wake of the pursued. The late war in Europe has compelled the Admiralty to secure a draught of water commensurate with the waters to be navigated, the first time in the history of Naval construction that so much consistency has been manifested. But may we not profit by their experience while yet there is room? Why should we build another squadron of vessels that can only enter a few of the more favored seaports of our own seacoast? It cannot be shown that vessels of light draught may not be made more efficient in action, nor will it be assumed that better accommodations may not be provided than the five new steamers possess, upon whose gun and berth decks a full grown man cannot

stand upright beneath the beams; and of the six vessels built by the late Act of Congress, the Niagara is the only one upon which a man of six feet can walk upright between decks with his hat on. With respect to the question of heavy or of light draught of water, they are only relative terms. The Hon. Secretary has set down 18 feet as the limit of a light draught of water. It would hardly be so for a steam frigate, much less a sloop of war; but for a steam sloop of war 18 feet would be a heavy draught. A merchant ship, of larger capacity and deeply laden, often draws less, and war vessels may always enjoy advantages that the merchant vessel does not possess. The war vessel is supposed to be adapted to a definite line of flotation—her model and outfit all conform to this; she is consequently always kept at her proper trim when in commission, and so circumstanced, should be the fleetest vessel afloat, because guns, ammunition and provisions are among the best kinds of cargo, and having no conflicting interests to be consulted in her construction with respect to rival carriers, they may always be kept in sailing trim when in commission. Not so with the merchant ship; she is on one voyage filled with cotton, and but partially loaded, and on the next she is loaded with iron, and not half full, while perhaps the third voyage is made with an assorted cargo on freight, the weightiest part of which often comes too late to secure its proper position in the hold; thus by this unavoidable bad stowage, the development of the best qualities of the ship have been often frustrated, and yet under these unfavorable circumstances, many of them are superior in speed to the best sailing vessels in the Navy, and as a whole, immeasurably in advance not only in speed, but in sea qualities and sea comforts, such as room and ventilation. All there is of science in ship-building lies in the model, and application of propulsory power with the distribution of materials—all beyond is art; and, on these questions of science, no scientific man will dare say that our Navy has ever been right; and why, we ask, have we thus pursued our course?

A brief review of some of our naval constructions may be interesting, as showing the incongruities which we condemn. We will take up the several classifications in their proper order, commencing with the Pennsylvania, the largest ship in the Navy. She was built under the direction of the Board of Navy Commissioners, made up of Commodores, there being no Admirals in our Navy. This vessel was launched in 1837, and sent to Norfolk to be docked and coppered. The Board had misgivings in reference to her stability, and sent the most of her armament to Norfolk in freighting vessels, while her water and shot were sent in the ship as ballast. She has never been sent to sea, nor will she be, unless razeed, by the loss of one deck at least. Her speed is about equal to that of a ship of the line—6½ knots. She yet remains at Norfolk, and greatly obstructs navigation, being narrow. She is used as a receiving ship, and an appr yet be necessary by Congress to remove the bar of beef

she is surrounded. Did she possess all the desirable qualities in her model, she would be unfit for service, being now quite far advanced in a state of decay. The ships of the line afloat are six in number, 84 guns, of which none are now at sea; they are used as receiving ships, and whenever they have been sent out, they have been accompanied with smaller vessels to do the despatch service, while they remained at their moorings a whole year at a time. The most unsightly and unwieldy have already been razeed, and have proved the wisdom of the course adopted. It would be wise policy to serve the remaining six in the same manner, and perhaps it may be necessary to relieve them of two decks instead of one, furnishing a new bow and stern at the same time. There are yet four of this class on the stocks, one of them at Sackett's Harbor, Lake Ontario, which never should be launched. A more reckless waste of materials could not well have been devised. The load line sea draught of a ship of the line is about 28 feet. Of the frigates, 50 guns, there are 13, one of which, the new Macedonian, was found to be so decidedly sluggish in her movements, that she was razeed to a sloop of war, and has done much better since. She was prepared originally for the exploring expedition of Lieut. Wilkes, but like the two brigs built for the same service, were condemned. The brigs were reported on their trial trip to be so completely unmanageable in mounting but half way up a sea and then sliding back without going over, that they were finally sold, and the service was performed by the *Vincennes* and other vessels, purchased from the merchant marine. The Sabine was re-modelled on the stocks before launching, while the stem remains in the yard as a memento of the past. They are a dull and unsightly class of vessels to the eye of a nautical mechanic, who regards utility as of more consequence than custom. Several of these vessels are kept as relics of the war of 1812, rather than for their availability in good sea qualities, although they are equally as good performers, and even better than some of those of modern build, the Columbia, for example. It would not be judicious to razee those vessels, for the reason that they require new ends at the same time, which would make them unnecessarily long and very costly, and they would be old vessels still. Their draught of water is about 21 feet, too much by at least three feet; their speed 8 to 10 knots. Of the old sloops of war nothing favorable can be said; modelled and built by the direction of the Navy Board of Commissioners, who not only built vessels, but prepared materials in frames of live oak and spars for all classes of vessels—ships of the line, frigates, sloops of war, and even steamers' frames were prepared by the Board. They actually modelled a navy of vessels for an unborn generation to build. These frames were cut so near the size, mould and bevel, and adapted to those outrageous models, that the greatest waste has been made to get the timber out of sight, and there is hardly a Navy-yard which has not yet part of the frame of some of those vessels modelled by this Board. In this manner the

favorite policy of the Board could be carried out, the tide of improvement could thus be dammed up, and the same class of stationary minds could continue to control it. When the Bureau system was adopted by Congress, the several Naval Constructors were permitted to build a sloop of war each by his own model, and, as a consequence, this class are, with few exceptions, worthy a place in the Navy, but certainly no match for the clipper vessels of the merchant service. Inasmuch as each Constructor had a *carte blanche*, their draught of water is variable, as well as their speed. There are no sailing vessels of smaller class worthy of the name, except it be those purchased from the merchant service. Of the steamers, it may be said they have been successful, and it would indeed appear so, if we may judge from the history of their performances made up in detached parcels. From these, however, nothing reliable can be obtained. *The log of a steamer will not furnish reliable data of the vessel's speed.* The current from the paddles or propeller runs out more line from the reel than the just proportion, hence the discrepancy in the trial trips, and in the subsequent performance on a voyage, of all our war steamers, and the reason is thus furnished why they sometimes *outrun the travel of their wheels.* The Missouri and Mississippi, the two first, were only passable, for the time, and it is most surprising that the Mississippi is now being rebuilt, under the head of repairs, at the approximate cost of a new vessel. It is a waste of money and materials to place engines in such disproportioned models. But as no vessel can be built without an Act of Congress, it must be so. She now needs two new ends quite as much, if not more than she needs new topsides, and unless this were done, it were folly to interfere with her engines. The old and new Princeton are both known; the former was not the legitimate offspring of the Bureau of Construction, or she would doubtless have been similar to the last, a condemned hulk, having rendered no service, unable to defend herself against the dangers of the sea. Of the new steam frigates, they draw too much water, and their speed must be determined by observation. The log, as we have shown, furnishes knots faster than they are made, and the wave at the bow or the foam at the wheel are no indication that the vessel is going fast. A 20 mile steamer will make less noise and disturbance than one of 10 miles per hour. The smaller despatch vessels were purchased, and are, generally speaking, the most efficient vessels in the Navy, both in speed and draught of water. But may we not continue to follow England, now that she has improved and built a new Navy? We say, No! We have hundreds of merchant vessels that in case of war would make a more formidable fleet of privateers than could be found in all the combined Navies of the world. If American models are sought for by all nations, which is the fact, why should they not be quite sufficient to An our Navy? And until there is some warrant for this, the p tinue to give small appropriations to Naval Construction States.

HARBORS AND COMMERCE OF PORTS ON LAKE MICHIGAN.

BY LIEUTENANT-COLONEL J. D. GRAHAM, TOPOGRAPHICAL ENGINEERS.

THE appointment of Lieutenant-Colonel Graham, to the Superintendency of Public Works on Lakes Michigan and St. Clair, was a most happy one for the interests of Western commerce. It gives us pleasure to testify to his energy, vigilance, and business-like economy, in the discharge of every duty entrusted to his care. In placing appropriations in his hands for the prosecution of Public Works, Congress may entertain no fears of their faithful and wise disbursement. This has not been the case formerly. Col. Graham proposes that all appropriations for harbors under his superintendence, be expended under his immediate supervision and control, by his own agents, selected by himself, and responsible to him for the enlightened and faithful performance of their duties, and not by irresponsible partizans, appointed to share the spoils of office, and of little service except as cormorants. We trust Congress will reform the Agency system, and give to the superintendent at Chicago entire control of all appropriations upon harbors under his supervision. The West has severely suffered from the want of topographical responsibility, while the Government has been defrauded in the waste of materials and labor, sufficient by this time to have built good harbors at many of the ports on the Lakes; we therefore hope that Congress will henceforth confer the entire responsibility of constructing harbor works upon Lakes Michigan and St. Clair upon the shoulders of the able and efficient officer now in charge of the office of Superintendent of Public Works at the Port of Chicago. It will rest there with honor to himself and advantage to the Great West.

We give place to the following letter from Col. Graham; and, beginning with Chicago, we shall publish extracts from his most instructive Reports, showing the commercial statistics and condition of the harbors of this portion of the West. The statistics will be found more full and accurate than any published by the newspaper press, for the reason that the information of the press is necessarily compiled from the books of the Custom-houses, which, owing to the loose practices of ship-masters in reporting, never receive the full accounts of imports and exports, and for the reason that Col. Graham's Report is founded upon the actual transactions of the merchants.

OFFICE GENERAL SUPERINTENDENCE OF LAKE MICHIGAN WORKS,
Chicago, Nov. 13, 1856.

To Messrs. GRIFFITHS & BATES, Editors of the U. S. NAUTICAL MAGAZINE,
No. 4 Bowling Green, New-York.

GENTLEMEN,—At the request of W. W. Bates, Esq., of your Company, I have this day sent to you, by express, a copy of Part I. of my Report on the Harbor Improvements on Lake Michigan, within the States of Wisconsin and Illinois, embracing the statistics of commerce, in full detail, for the year 1855.

In many of the copies at first issued, the algebraic signs on pages 13 and 19 were incorrectly printed, by not discriminating between the signs + (plus) and × (multiplication). I had the leaves belonging to those pages reprinted, so soon as I discovered the error. The copy now sent to you is correct in that and other respects.

Very respectfully your obt. servant,

J. D. Graham, *Lieut.-Col., &c.*

CHICAGO.

The present vast extent and rapidly increasing growth of the commerce of Chicago, renders it a matter of absolute necessity, in which not only Illinois, but also a number of her neighboring States, are deeply interested, that her harbor should be kept in the best and most secure state of improvement, so as always to afford, during the season of navigation, a safe and easy entrance and departure for vessels drawing at least twelve (12) feet of water.

The States which are thus directly interested on account of a direct intercommunication of commerce with the port of Chicago, are New-York, Pennsylvania, Ohio, Michigan, Indiana, Illinois, and Wisconsin, and also Minnesota Territory. The shores of all these are washed by either Lake Michigan or the other great lakes with which Chicago has a direct and very extensive commerce through the St. Clair flats. The other States and Territories which do not reach to the great Lakes, but which are, nevertheless, greatly interested in the preservation of Chicago harbor, are Iowa and Missouri, and Nebraska and Kansas. A very large portion of the wheat and other grain produced in these last-mentioned States and Territories will be brought by railroad to the port of Chicago, to be shipped thence to the eastern Atlantic markets. This destination will generally procure for the agriculturist better prices and quicker sale than any other.

In my report of July 30, 1854, on the subject of the new light-house proposed for this harbor, it was shown that the amount of duties on foreign importations, paid at the office of the Collector of Customs here, during the fiscal year included between July 1, 1853, and June 30, 1854, was $334,043 98.

Many intelligent persons, not close observers of the enterprise and increasing commerce of Chicago, then expressed the opinion that the annual revenue from this source would not again, for many years to come, be so great.

It will be seen, however, from a statement of receipts from the same source, for the year beginning January 1, 1854, and ending December 31, 1854, that they amounted, during the twelve months of the year 1854, to the sum of $577,160 93.

During the twelve months of the year 1855, the amount of duties collected from the same source at Chicago was $294,948 01.

Let us go back as far as the year 1853, in our statement of the revenue paid into the general treasury of the United States, from custom-house duties on foreign importations received at Chicago, and it will stand as follows:

For the 12 months of the year 1853, ...	$
" " " 1854, ...	
" " " 1855, ...	
Average for the last three years, ...	

The great excess for the year 1854, over 1853 and 1855, is due to the greater amount of railroad iron imported into Chicago during 1854.

The amount of duties on railroad iron alone, imported into Chicago during the three years above mentioned, is as follows:

For the 12 months of 1853,	$343,849 60
" " 1854,	549,378 44
" " 1855,	251,320 86

Hence the revenue derived from all other articles than railroad iron, at Chicago, during those three years, were as follows:

For the 12 months of 1853,	$17,453 06
" " 1854,	27,782 49
" " 1855,	43,627 15

I am indebted to William B. Snowhook, Esq., late Collector, and to Philip Conley, Esq., the present Collector for the port of Chicago, for the above statements, taken from their official books. They will be found to correspond with their returns made to the Treasury Department at Washington.

The amount and value of the foreign and domestic commerce of the port of Chicago, during the year 1855, are as follows:

Imports.	
1. By Lake Shipment,	$95,724,797 43
2. By the Illinois and Michigan Canal,	7,417,769 80
3. By Railroads,	88,381,597 90
Total value of Imports in 1855,	$191,524,165 13
Exports.	
1. By Lake Shipment,	$34,783,726 32
2. By the Illinois and Michigan Canal,	80,913,167 07
3. By Railroads,	98,421,324 86
Total value of Exports in 1855,	$214,118,218 25

Aggregate value of the imports and exports at Chicago, during the year 1855, $405,642,383 38.

Of the above valuation of $405,642,383 38, the valuation of the articles which passed in vessels over the St. Clair flats, in shipments to and from Chicago, alone, in the year 1855, amounted to $113,700,248 89.

The value of the wholesale mercantile business of the city of Chicago, for the year 1855, was $50,186,000.

The value of the tonnage which arrived at the port of Chicago in the year 1855, was (at $35 valuation per ton) $42,462,035. The amount of tonnage thus arriving in 1855 was 1,213,201 tons.

The number and kind of vessels, of different classes, actually owned by Chicago merchants and masters—employed in active commerce—on the 31st of December, 1855, was: of steamers, 2; propellers, 4; steam-tugs, 5; barques, 4; brigs, 32; schooners, 111; scows, 3. The amount of tonnage is 31,108$\frac{52}{95}$ tons. The value of this tonnage, belonging exclusively to the port of Chicago, at the low valuation of $35 per ton, amounts to the sum of $1,088,801 74.

The amount of hospital fees collected from the Lake seamen at the port of Chicago, was as follows, viz.:

In the year 1854,	$1,393 68
In the year 1855,	1,753 07
Increase for 1855 over 1854,	$359 39

The value of foreign merchandise, received at the port of Chicago from foreign countries, in American vessels, in the year 1855, amounted to $55,392 82.

The value of foreign merchandise, received in foreign vessels from foreign countries, at the port of Chicago, in the year 1855, amounted to $225,826.

Chicago is the chief port of entry for foreign importations of this collection district. There is a collector of custom duties stationed here.

The Chicago light-house, as it now stands, bears south 81° 20′ west, distant one thousand and twenty-nine (1,029) yards from the extremity of the United States north pier.

The city has grown up to such an extent in its vicinity, as to cause its buildings and other improvements to eclipse this light from the view of vessels on the Lake throughout 81° out of the 177° of the horizon that should be illuminated. It has, consequently, been determined to erect a new light-house at or near the extremity of the north pier. The subject having been committed to my attention by the bureau (under whose direction it then was), soon after I took my station here, it was fully reported upon in my report No. 30, of July 30, 1854.

Subsequently the subject was placed under the supervision of the light-house board, under which my direction of it is continued.

The foregoing statistics of the commerce of Chicago, for the year 1855, and the revenue derived therefrom to the public treasury, will serve to show how important it is to the maintenance of the revenue which should continue to be collected at this port in future years, that the harbor should be preserved in the best condition to insure easy and safe ingress and egress for shipping throughout every navigable season. This will be secured in a permanent manner, so far as relates to the harbor piers, by rebuilding them in solid stone masonry from one foot below to five feet above the Lake surface, in the manner I have proposed. They will not then require scarcely any annual expenditure to keep them in repair.

The statistics have been obtained by much labor and perseverance, with a view to the strictest accuracy. It has been a task unavoidably requiring much more time than I had anticipated in the beginning. The result has amply justified the labor; at least, I trust it will be so admitted, for the published statistics of this commerce, which has gone forth to the country, through the newspaper press of this city, falls far short of its actual extent. On discovering this fact, I felt it to be a matter of duty to obtain the information directly from the only authentic sources, namely: the custom-house, mercantile, and warehouse records. For this object alone, two hundred and twenty-five large folio manuscript counting-house books, numbering in all seventy-eight thousand seven hundred and fifty (78,750) large folio pages have been examined and thoroughly analyzed, and not a quantity has been used in obtaining our aggregate results, which has not been thus derived. If a more critical scrutiny were made into the above-mentioned sources of information, than we have in some cases of minute details been able to make, it would somewhat augment our results. It could not, in any case, diminish them. In this great labor I have had the valuable assistance of Captain Edward Kelly, of the mercantile marine of whose experience in the shipping business has given him great seeking proper and reliable sources of information.

I have not taken time to obtain the statistics, in detail, of value of the manufactures of Chicago for the year 1855; bu

ral estimate, founded on reliable data, the value of these for that year has undoubtedly exceeded ten millions of dollars, say $10,000,000.

The population of Chicago was, on the 31st of December, 1855, about the number of 82,750 souls.

This number is derived from a pretty close estimate made for each ward.

The population has increased, in the several periods below indicated, since the year 1840, as follows, viz.:

The population in the year	1840 was		4,470
" "	1843		7,580
" "	1845		12,088
" "	1846		14,170
" "	1847		16,860
" "	1848		20,035
" "	1849		23,047
" "	1850		28,269
" "	1852		38,733
" "	1853		60,652
" "	1854	December 31	74,500
" "	1855	December 31	82,750

The population of this city is increasing, perhaps, in as rapid a ratio as that of any other city in the world; and it will probably go on at about the same rate until it reaches several hundred thousand. The immense agricultural resources of the vast extent of country, the one-fourth part of which is not yet developed, lying to the south, southwest, west, and northwest, which is, and must continue to be, tributary to the commerce of Chicago, through her numerous radiating railroads, together with what is derived by Lake navigation, must insure this rapid increase of population, and a corresponding increase of her commerce. They all depend for their prosperity greatly upon the preservation of her harbor, in a good and permanent condition, for the ready entrance and safe anchorage of vessels drawing full twelve (12) feet of water.

Such are the claims which, in a civil point of view, are presented to our mind in behalf of the preservation of this harbor.

There is still another, of not less magnitude, which is exclusively national. It is the influence it would have in the *military defence of this part of our frontier, and the success of our arms, in time of war.*

A single glance at the general map of the United States will be sufficient to show the importance of Chicago as a military position in conducting our operations in defence of our northwestern frontier in time of war. The great depth to which Lake Michigan here penetrates into a populous and fertile country, totally devoid of fortifications, would constitute an irresistible inducement to an enemy, in the event of a national war, to aim, with all his strength, at this point, should he find it divested of any of the chief means of defence, which are by all nations accorded to maritime ports of chief importance. He would find Chicago very much in such a state of weakness, if the harbor works here are allowed to fall into a dilapidated condition; for then our naval force would not itself be secure in hovering about this port, or in cruising in its immediate vicinity, for purposes of military defence. There is scarcely a week in the year that a fleet might not have occasion to take refuge from the Lake gales to a safe harbor, affording a ready entrance by means of a ship channel of at least twelve (12) feet draught of water. Deprived of this advantage, the only resort would be to take the open sea, and there buffet out the storms. On their subsid-

ing, this defensive fleet, on attempting to resume its proper position, might find it occupied by an enemy, with all the advantages, in a combat, which ought to be secured to our side.

An enemy, once possessing the harbor, could, by a powerful fleet, cover the landing of an army in pursuit of the conquest of territory, or designing to lay heavy pecuniary contributions upon the inhabitants. Peace is the proper time to prepare against such a catastrophe; and the protection of the harbor in the manner recommended is the first element in the military defence that should be attended to.

With the harbor secured permanently in good condition, the port of Chicago, through the enterprise of the people of Illinois and the surrounding States, will possess the elements of military strength in, perhaps, a greater degree than any other seaport in the Union. There are as many as ten principal railroads which, at this day, concentrate at this port, after having traversed and intersected an area of most fertile country of 163,240 square miles, or 104,473,600 acres. These railroads have a total length of 2,188 miles, exclusive of branches, which vary in length from 20 to 100 miles, and upwards, and make an aggregate length of about 2,720 miles of railroad, which is actually tributary to this port.

This immense reticulation of railroads, traversing or approaching to within a few miles of every homestead, now daily brings into Chicago for exportation, the vast amount of agricultural produce exhibited in our tables. These are their peace-offerings to other nations. In the emergency of war, however, these railroads could, in a single day, concentrate at Chicago troops enough for any military campaign, even if designed to cover our whole northwestern Lake frontier. Besides this, they would be the means of bringing here daily the munitions of war, and, above all, the necessary articles of subsistence and forage to sustain an army of any magnitude, and to keep it in activity throughout any period that the war might last.

In other words, Chicago would, in time of war, be the chief *point d'appui* of military operations in the northwest. From hence would be sent military supplies of all kinds, spreading, by means of our Lake navigation, in every required direction, provided the evident requirements in aid of that navigation are secured now, while we are in full possession of those ample resources which peace alone bestows on a nation, and enables her, without oppressive taxation, to meet the expenses which are necessary to ensure success in war, if, unfortunately, it should come.

These requirements consist, emphatically, in keeping the harbor of Chicago in an efficient condition for the accommodation of armed vessels of the largest class, that would operate on the Lakes in time of war, and in opening and securing an ample channel for the same class of vessels through the St. Clair flats, in Lake St. Clair.

Visit of a French Naval Constructor to the United States.—A distinguished French Naval Constructor from Havre, has called at the office of the *Nautical Magazine and Naval Journal* preparatory to visiting the ship-yards of our country on a tour of observation. He will also visit our naval establishments, and take notes of all improvements wherever found. No doubt he will return to Europe prepared to introduce many improvements into the French Navy.

THE FEASIBILITY OF DIRECT TRADE BETWEEN THE UNITED STATES AND THE MEDITERRANEAN PORTS BY CLIPPER PROPELLERS.

THE question of steam for the purposes of navigation has long since ceased to be problematic, whether for short voyages, or for those of moderate length; and it cannot be doubted, whether the question is based upon the laws of science or experience, that it is even more advantageous for long voyages. With reference to the size of vessels upon which steam is applied, there can be no better standard of utility than that of the trade in which they are employed, and the demand for more or less frequent transmission of mailable communication or correspondence. If we take the Mediteranean trade for an example of long voyages, we are furnished with all the means of determining a standard of utility, both for the size of the vessel and the kind of propulsory power. The trade of the United States with Eastern Europe is at present limited, in consequence of the disparaging influence exerted by English merchants against the induction of American commerce in the Mediterranean sea, and the careful measures adopted to supply the Eastern world not only with the products of English soil, but with those of American growth in English ships; hence the almost entire absence of a knowledge of the demand for American products in the cities of the Levant. That a direct trade between the cities of Spain, Portugal, France, Italy, Austria, Egypt, Greece and the United States, will be of the greatest benefit, enabling each to export and import the other's products on the most equitable terms, no one will deny. The widely extended seacoast of the United States, with her prolific mines, extensive forests, and diversified channels of commerce, have had a marked influence on the maritime proclivities of the merchants of the Western world.

That aphorism of English merchants which holds that COMMERCE IS KING, is not less true with regard to other nations. It has always been, and still continues to be the province of England, to extend her trade both directly and indirectly; by this means she is not only able to discover the weak points of her neighbors, but at the same time to hide her own, and bring the profits of her trade into the coffers of her bankers. If the import trade of a Mediteranean port demands an article which is the production of other countries, no matter where, she is careful to discover the want, and not less careful to supply it in her own ships. The grasping propensities of England, to keep the trade of the Mediterranean in the hands of her merchants, induced her capitalists to embark in the construction of the *Suez Canal*, hoping to maintain the monopoly of trade.

That the states on the Mediterranean sea are abundantly able to carry on a direct trade with the world, and obtain direct from those parts where produced, such commodities as they need, in exchange for their own, no one will deny. It is a most singular fact, that the United States, *who are the*

most extensive commercial nation on the globe, and have the greatest surplus of breadstuffs and Naval stores, are almost entirely isolated from the Mediterranean trade, partly by the apathy of the merchants of these countries, and partly by the avarice of British merchants; while it is acknowledged, even in England, that the Americans build the finest and fleetest ships, and have the means of supplying the world with vessels adapted to any and every trade.

This English monopoly of indirect trade will be palmed off upon the Mediterranean states no longer than *they are willing to tolerate it; they themselves should move in this matter, being the most deeply interested*, by building lines of vessels of their own, in whole or in part. The French government saw the importance of such measures, and with a view, doubtless, to facilitate the construction of vessels abroad, recently enacted, that all vessels under 80 tons, of foreign build, might be nationalized, and trading exclusively on the coasts of the colony of Algeria, would be free from duties under the French flag. The most effectual mode of establishing the direct trade of the Mediterranean with the United States, will be to build vessels adapted to the trade, and send them out with cargoes of American produce, direct, such as is now conveyed by the way of England, and in English vessels; this would enable the merchants of Madeira, Cadiz, Algeria, Venice, Trieste, Alexandria, etc., not only to see, but enjoy the advantages of a direct trade with the United States. The kind of vessel best adapted to trade between the United States and the Mediterranean, is that of the clipper propeller. This kind of vessel has immense advantages over the paddle-wheel steamer, and over the ordinary sailing ship, inasmuch as they can proceed steadily forward on their voyage under all circumstances, while at the same time only a small portion of their capacity is sacrificed for engine and coal, while an average speed quite equal to the paddle-wheel vessel is attained, *and at but half the cost.* The calms which often prevail in the South Atlantic and in the southern part of the North Atlantic, and the necessity, in the first stages of this immense trade, to touch at several ports, renders it necessary to have auxiliary steam propulsion, which will be found the most advantageous in all respects. Vessels of about 600 to 700 tons would be quite large enough to secure remunerative profits, such as would astonish the merchants of the Eastern world.

THE CONTROVERSY CLOSING.—We are in receipt of a note from our esteemed correspondent, "FAIR PLAY," to the purport that the article of Mr. Stimers, in the preceding number, so fully and fairly expla[...] working of the Martin Boiler, that it is quite unnecessary to go into its merits in his discussion with "CORRESPONDENT." W[...] that our correspondents now take up some other *Boiler*, and rake merrily in its furnace.

THE MARTIN BOILER.

To the Editors of Nautical Magazine:

Gentlemen,—I will now, with your permission, continue my reply to "*Fair Play,*" on the subject of the so-called Martin Boiler.

In addition to the disadvantages previously referred to, there will be found the accumulation of sedimentary matter thrown down from the tubes, and other parts of the boiler. As it is *evident* that placing the furnace underneath the tubes is *tantamount* to making the crown of the furnaces the *bottom of the boiler;* consequently, everything in the shape of scale or mud must tend to gravitate upon the furnaces, as shown. It will be urged that the furnaces are of a semicircular form at top, and will, therefore, throw off the scales, etc., in the water, between the furnaces, to descend into the water bottom. *Not so,* however; as the stays, crows-feet, etc., will *form places of lodgment to prevent* its being so thrown down—the strong ebullition, too, in the waterways will tend to prevent their descent—the plate must then *burn and be destroyed, thus endangering* the boilers in a vital part.

Again, the forms *chosen by Mr. Martin* for these boilers are *most unfortunate,* as they are *utterly destitute* of elements of *strength, requiring* a forest or wilderness of stays to make them secure, often failing even then, from the fact that it has been *difficult, if not impossible,* to determine the *planes of pressure,* requiring, at times, several trials from the inspectors, who were called on to inspect certain of these boilers, *repeatedly giving way, requiring additional stays each time,* until at last a *reluctant certificate* was granted by the inspectors, after, in this rude way, *groping for the weak parts of the boiler.* "Fair Play" may call this good boiler engineering, but for our part we must be allowed to say we do *not,* as it shows an ignorance of *the commonest mechanical principles* of boiler building, so great as to be *ludicrous in its absurdity.*

Correspondent.

Freighting Pitch Pine.—The following, from the New-York *Herald,* will be interesting to a class of our readers:

To the Editor of the Herald:—Ship owners in engaging freight on pitch pine from Savannah, Doboy Island, and other Southern ports, must be on their guard and make due allowance for the difference between carrying hewn timber and sawed lumber, as a ship will not carry as much of the former by all of one-third. Parties engaging freight for France on timber by the thousand, as is the custom, instead of by the load, as is customary for Liverpool, will be disappointed at the result of their freight list. A vessel from Savannah carries about her register tonnage in load of 600 feet each, or 50 cubic feet. It is customary for a vessel loading square timber for France to engage freight by the thousand superficial feet, instead of by the load, as for Liverpool; and owners who have loaded for those ports predicating the carrying on what these vessels have carried in lumber, have found a serious loss in the freight list, equivalent to one-third.

D.

SHIPPING REVIEW.

FREIGHTS IN NOVEMBER.—The month opened with an active business to Great Britain, though the general freighting business was emphatically dull. Nov. 5th.—To Liverpool, corn and wheat at 8¾d. *a* 9¼d.; flour, 2s.; cotton, 5-32d. To London, corn and wheat at 11d.; flour, 3s. 3d. To Glasgow, wheat, 12d.; flour, 3s. To Havre, wheat, 20c. To Rotterdam, measurement goods, 40s. To Bremen, cotton, ¼c.; flour, 2s. 9d. To California the offerings were light, but rates were without change, 27½ *a* 30c.

Charters were decidedly dull; some of them were, a barque to Buenos Ayres, $1.25 per bbl.; from Philadelphia to Pernambuco and back to New-York, $1.75 per bbl.; a schooner, 145 tons, to Porto Cabello and back, $1,600; a schooner, 125 tons, to Mansanilla and back, $1,350; a ship, 850 tons, to Valparaiso and Callao, about $9.000.

Nov. 8th.—To Liverpool freights declined; grain touched 7¾d. *a* 8¾d., but general business remained unchanged. Charters from New-Orleans to Liverpool, Havre, Marseilles, or Genoa, for cotton, ¾d.

Nov. 12th.—To Great Britain firmness had been restored, and an active business was doing in breadstuffs. No material change in any other direction, and the offerings were moderate. To Liverpool, grain, 8½d. *a* 9d. for corn, and 9d. *a* 9½d. for wheat; rosin, 2s. 3d. To Edinburgh, wheat, 14d.; flour, 4s. To Melbourne offerings were moderate, at 25 *a* 30c. Charters to Buenos Ayres, $15 for lumber. To Oporto, wheat, 22c.; flour, $1. A schooner, 145 tons, New-York to Martinique, $1,050 out. From Attakapas to New-York, sugar and molasses, $5 and $5.50, on and under deck. From Wilmington to Honduras, lumber, $12, and back to New-York, mahogany, $14. To north side of Cuba and back, sugar, 36c. Bucksville to New-York, hewn timber, $10.50. New-York to Bangor, corn, 5½c.; flour, 25c. Boston to California, at 25 *a* 27½c. per foot for measurement goods; $10 per ton for coal. To Australia, $22.50 *a* $25 per M. for lumber. Coal freights from Philadelphia *a* $1.75, with a fair amount of freight offering to southern ports in the U. S. Philadelphia to Liverpool, dull; wheat, 9d. *a* 10d; flour, 2s. 6d. To San Francisco, 30c. per foot.

Nov. 15th.—Continued activity prevailed in the shipments of breadstuffs to Great Britain. Freight slightly advancing. The engagements to Glasgow were unprecedentedly large for that destination, owing to a partial failure of the cereal crop of Scotland. Tonnage was in fair supply, demand steady and good for the grain trade. To Liverpool, wheat, 10d. *a* 10½d.; flour, 2s. 9d. Charters: a ship from Calcutta to New-York, at $14 per ton. A brig of 2,100 bbls., Sicily to New-York, $1,700. One of 248 tons, to Coast of Africa, $700 per month. A brig, 3,300 bbls., from Norfolk to Port Spain, Trinidad, and back to New-York, $3,500. A barque, 216 tons, to Bermuda, $800, port charges paid.

Nov. 19.—Opened very firm, but closed with heavy market to Liverpool. In other directions no change of importance occurred. To Liverpool, wheat, at 9½d. *a* 10d.; flour, 2s. 7½d. To Melbourne, $10 per ton, measurement. To New-Orleans, hay, $6 50 per ton, and coal, $3.50. To California, 27½ *a* 30c., but offerings light. To Buenos Ayres, flour, $1.25 per bbl. To Hamburgh, 40s. for measurement goods. Charters: rates unchanged.

Although a prospective improvement is anticipated in the general freighting business, it has remained in nearly the same condition for the greater portion of the past year; and, notwithstanding the prevailing activity in the grain trade to Europe, we understand that the regular packet ships are losing money, owing to the exceedingly low rates of return freights. The numerous steamships crossing the Atlantic, appear to monopolize nearly all the light goods coming this way, leaving chiefly for the packets such weighty co[...]ties as iron, coal, salt, &c. The accumulation of tonnage has, as it appears [...] crease in our exports and imports, great as they have been during the [...] unless some new channel of commerce shall be found, the depression o[...]

rest will be likely to continue. The abatement in ship-building for the past two years however, will do much to restore the carrying trade upon a paying basis. From 1845 to 1855 the increase of tonnage was 74 per cent., being double the per centage of the previous ten years. Such a surprising activity in ship-building was calculated to produce disappointment and losses, such as we are now suffering. It is stated that the stringency of capitalists, and the losses sustained by ship-owners of late, has caused many sacrifices to be made by eastern ship-builders, who have been obliged to dispose of their tonnage for five or six dollars less than cost. The rage for *new* vessels may be assigned as one cause of mischief, in unduly stimulating the ship-yards of the country. Ship-owners order, or purchase new shipping, before the old is entirely worn out; the old vessel passes into other hands, but continues to run in the same trade, a competitor with the new ship, long after she is unseaworthy. We believe that, to-day, the mercantile fleet of the United States would be found insufficient for our carrying trade, were all old and unseaworthy shipping in it condemned and laid up.

SEAMEN AND WAGES.

Sailors have been growing very scarce recently, and it is difficult to induce them to ship for Liverpool; some ships have been detained in consequence.

	Wages.	Advance.
From New-York to Liverpool....................per month,	$20	$40 *a* 45
" " " London...................... "	20	35
" " " Havre...................... "	20	35
" " " N. of Europe.................. "	20	30
" Mediterranean and South America........... "	16	20
" West Indies.......................... "	18	18 *a* 20
" East Indies and California.................. "	15	30
" Coasting.................................. "	20	10

SALES AND PRICES OF SHIPS.

Ship Flora, built at Richmond, Me., 800 tons, new, for $42,000.
Schr. Emu, built by Merry & Gay, Milan, Ohio, for $12,000.
Ship built at Bath, Me., 1000 tons, $46,000.
Ship H. Grinnell, five years old, 970 tons, at Marseilles, $38,000.
Schr. Princeton, built at Rockland, Me., 248 tons, $13,000.
Schr. Saxon, of Boston, six years old, for $27,500, half cash, balance four and six months.
Ship Sarah, 454 tons, sold in Boston for $13,000.
Barque Medora, 200 tons, for $4,500.
Ship Sir John Franklin, 1000 tons, at auction, $44,500.
Ship Ocean Herald, sold at Marseilles for 65,000 five franc pieces.
Brig Ocean Guide, 283 tons, built in 1854, $10,000.
Barque Tangier, 394 tons, sold at Boston for $13,500.
Schr. Mirror, new, sold to U. S Government for $4,400 cash. She is to [illegible] noble, Inspector of Light-houses.
Schr. Belle of the Cape, 63 tons, built in 1854, sold for $2,400.
Ship Sea-dog, 579 tons, new, $25,000.
Ship Gossamer, by U. S. Marshal, for $22,000.
Ship Queen of Clippers, sold at Marseilles for 250,000 francs.
Barque Osceola, at New Bedford, for $3,000.
Ship Augustine Heard, twelve years old, $12,500.
Barque President, whaler, for $8,400.
Clipper ship Courser, five years old, 1024 tons, by auction [illegible] and four months.
Barque Anna Perkins, at Marseilles, 180,000 francs.
Ship Astoria, sold, price not published. Marseilles has [illegible] considerable extent by American ships.

NEW SHIPS ON THE STOCKS FOR SALE.

Under this head we propose to publish monthly reports of shipping *on the stocks* for sale. We therefore invite builders to notify us of the tonnage, dimensions, &c. of their vessels, which they may be building for market; it will cost them nothing but the trouble of writing us.

At South Boston, the Messrs. Briggs have in frame a good freight modelled barque of 700 tons—for sale.
At East Boston, Mr. Samuel Hall is building a vessel of 700 tons—for sale.
Same place—Mr. Paul Curtis has a freighting ship of 1000 tons nearly finished—for sale.
Same place—Mr. Daniel D. Kelly has a freighting ship of 1000 tons nearly completed—for sale.

There are other vessels on the stocks in the vicinity of Boston, some of which are doubtless for sale, but the above comprise all that have reached us. Ship-builders will find it to their interest to furnish us with reports of their business not under contract.

SHIP-BUILDING IN LOWER CANADA.

The prospects of ship-building on the St. Lawrence River appears altogether unfavorable for the present winter. The difficulty finds a solution in the diminished trade in timber during the past summer. This was on account of a panic which was created in the spring, in an endeavor to raise the price of timber, being founded on a report that there was insufficient water to bring the timber to market. The effect of this news in England was the stoppage of all transactions on Canadian account. The timber came to market, nevertheless, but the ships to carry it to England sought freight at St. John's, N. B. The The Canadian lumbermen have become embarrassed, while the timbermen of New Brunswick have shipped their stocks, and are preparing for extensive operations the coming winter. Times will be good in the latter province, but dull in the former for the next year.

Ship-building in Canada is a secondary interest—the lumber trade having at disposal nearly the entire banking capital of Quebec. The large houses in this trade have always had the preference in accommodation, and while the funds at command of the banks have scarcely increased for fifteen years, the value of lumber has been doubled. The ship-builders should enlist capitalists in the establishment of a bank at Quebec, which should advance a certain amount of funds on the security of the ship, to enable them to continue their business at all times. Now they have to pay enormous commissions in Liverpool, and are obliged to make sale of their ships as fast as built, whereas they should be enabled, by banking facilities, to hold the ships and sail them till a fair price is obtained.

Ship-building is prosecuted with considerable activity in New-Brunswick. The Mirimachi Colonial *Times* states that twenty vessels have been launched in the northern section of the province during the present season, and that six more will be ready for launching in a short time. The amount of tonnage is set down at 18,661 tons. The largest vessel launched was 1365 tons.

LAUNCHES.

At Newburyport, October 27th, a fine ship, not named.
At Portsmouth, N. H., October 25th, clipper ship Charger, of 1300 tons.
At Wells, Me., October 16th, barque Elm City, 300 tons, W. I. trade.
At Medford, Mass., by J. O. Curtis & Sons, barque Young Turk, 500 tons.
At West Dennis, Me., October 30th, brig John Freeman, 360 tons.
At Brewer, Me., by Coopers' and Ship-builders' Co., a ship, 600 tons.
At Bath, Me., October 30th, a ship of 1000 tons, not named.
At Newburyport, Mass., October 30th, ship Eddystone, of 1000 tons.
At Harrington, Me., brig Black Hawk, of 380 tons.

At Chelsea, Mass., brig Morning Star, 90 ft. long, 24 ft. wide, 9 ft. hold, built by Jonathan Stetson for Missionary uses in the Pacific Ocean. The money was furnished by the contributions of *Sunday school children*. The launch was made the occasion of a laudable celebration by Sabbath school children and teachers, numbered by thousands, and various appropriate addresses were made.
At Warren, Me., October 30th, barque Cordelia, of 350 tons.
At Machias, Me., October 30th, schr. Oriental, of 200 tons.
At Setauket, L. I., by N. Hand, Esq, barque Urania, of 406 tons.
At Cumberland, Me., November 1st, barque Indian Summer, of 370 tons; is built of the same model as the celebrated Grapeshot. She is for sale.
At Baltimore, November 3d, barque Hurricane Bird, of 250 tons; S. A. trade.
At Waldoboro, Me., October 27th, schr. Diamond, of 250 tons.
At Frankfort, Me., November 13th, by Treat & Co., barque H. E. Churchill, of 700 tons.
At Newcastle, Me., November 15th, by D. Weymouth, Esq., ship King Philip, of 1100 tons; Cal. trade.
At Amesbury, Mass., November 4th, by S. McKay, Esq., a tern. schr. of 400 tons; freighting business.
At Woolwich, Me., November 13th, ship C. Davenport, of about 1000 tons.
At Harpswell, Me., November 11th, schr. G. A. Deering, of 250 tons.
At Rockland, Me, November 4th, brig Ocean Eagle, of 300 tons.
At Thomaston, Me., October 30th, ship Aldanah, of 1100 tons,
At Thomaston, Me., November 1st, ship St. James, of 1200 tons.
At Thomaston, Me., November 1st, brig S. M. Shibbles, of 400 tons.
At Warren, Me., November 12th, ship M. Ludwig, of 1200 tons.
At Savannah, Ga., October 22d, steam-tug Reliance, of 80 horse-power,
At Baltimore, October 25th, brig J. B. George, of 225 tons.
At Bucksport, Me., November 1st, a ship of 1200 tons, not named; cotton trade.
At Belfast, Me., October 27th, barque A. C. Adams, of 400 tons.
At Baltimore, November 8th, brig Gipsey, of 240 tons; W. I. trade.
At Centreville, Cape Cod, schr. H. Manton, of 200 tons; coasting trade.
At Fairhaven, October 29th, by Messrs. Delano & Co., schr. Forest King, of 336 tons
At Baltimore, November 1st, ship M. C. Stevens, of 700 tons, owned by African Colonization Society.

DISASTERS AT SEA.

STEAMERS.

James Murray (tug), was burned in the Chesapeake Bay, October 5th.
Tay (Br.), was wrecked on the coast of Mexico, August 28th.
Niagara, was destroyed by fire on Lake Michigan, September ——.
Genoa, was totally lost in Missouri River, September 30th.
Perseverance, was burned to the water's edge at Indianola, Texas, October 30th.
City of Savannah, Savannah for Baltimore, sunk near Cape Henry, October 16th.
Falcon, was burned at Chicago, Ill., October 17th.
Top-Gallant (prop.), sunk on her passage to New Haven, Conn., October 17th.
Monmouth, in collision with brig Wanderer, in Chesapeake Bay, October 15th.
Lyonaise (Fr.), to Havre, was lost near Nantucket Shoals, November 4th.
O. N. Chapin (tug), was lost on Lake Erie, October 31st.
J. W. Brooks (prop.), was lost on Lake Ontario, November 4th.
Superior (steamboat), was lost on Lake Superior, November 1st.

SHIPS.

Mohawk (Br.), was wrecked near Cariboo Point, September 23d.
Britannia (Br.), Plymouth, Eng., for Quebec, was lost off Cape North, C. B., September 24th.
Canton (Br.), London, for Quebec, foundered at sea, September 8th.
Yeoman (Br), in collision with latter ship and sunk, September 25th, 19 lives lost.
Helen Heilgers (Br.), in collision with former ship and sunk, September 25th, 25 lives lost.
Higginson (Br.), was totally lost near Wicklow, Ireland, September 29th.
M. Luther (Br.), Quebec, for Liverpool, put into Kingston in distress, September 28th.
Bateau Brilliant (Fr.), New Castle, Eng., for Algiers, foundered at sea, September ——.
Kentucky, which put into the Western Islands September 20th, is a total wreck.
Chalmers (Br.), at San Francisco, from London, is much damaged.
Southern Belle, Liverpool, for Boston, was burned at sea, October 17th, crew saved.
Rio Grande, Calcutta, for Melbourne, was wrecked on the Burmese Coast.
Lady Franklin, New-York for Trieste, Austria, was abandoned in a sinking condition, October 31st.
Majestic (Br.), England, for Charlottetown, P. E. I., was wrecked near Pictou, N. S., October 24th.

Unknown, was seen ashore on Staten Island.
Kitty Simpson, Cadiz, for Boston, put into New-York much damaged, November 18th.
Clarendon, Callao, for Cork, put into Rio Janeiro, leaky.

BARQUES.

Kirkland, Rio Janeiro, for New-Orleans, was wrecked near Absecom Inlet, September 29th.
Etheldred (Br.), Quebec, for Swansea, Wales, was wrecked near former port, September 11th.
Himalaya (Br.), Pictou, N. S., for Boston, sunk after being in collision, October 11th.
Marie, Norfolk, Va., for Boston, was abandoned Oct. ——.
John Ayres, is supposed to have foundered on Lake Michigan, November ——.
Octavia, Matanzas, for Boston, is ashore near Key West, will be a total loss.
American Republic, Chicago, Ill., for Buffalo, N. Y., sunk near latter port, November 4th.
Gipsey Queen is ashore near Charleston, S. C., November 17th.
E. Watts, at New-York, from Ponce, P. R., lost sails, &c.
Cossack, Singapore, put into New-York much damaged, &c., November 18th.

BRIGS.

Alma, New-York, for St. John's, N. B., was wrecked on Sable Island, September 23d.
Tamoree, was wrecked on Abralhas Banks, Brazil, September 13th.
Wild Pigeon, Pensacola, Fla., for Havana, supposed to be lost, August 30th.
Abbey Frances, Port-au-Prince, for New-York, was lost in Rum Cay, Oct. ——.
Nancy Ann, New-York, for Portland, Me., was damaged October 24th.
J. W. Collingwood (Br.), Quebec, for London, was abandoned October 5th, crew saved.
Telos, Trinidad, for Boston, was abandoned in a sinking condition, November 4th.
Oleron, Georgetown, S. C., for Porto Rico, was abandoned and water-logged, October ——.
Kirke White, Chicago, Ill., is supposed to have been lost on Lake Michigan, November ——.
Griffin (Br.), Turks Island, for Boston, was totally lost off Currituck Inlet, November 5th.
Eastern State, Boston, for Georgetown, S. C., put back much damaged, November ——.
Lelie (Fr.), Gonaives, Hayti, for Havre, was wrecked on Crooked Island, October ——.
Idlewild, Baltimore, Md., for Boston, ashore on Body Island, will be a total loss.
Leghorn, Philadelphia, for Boston, put into Portland, Me., much damaged, October 31st.
Tallulah, Savannah, for Rockland, Me., put into Charleston, S. C., leaky, &c., November 11th.
Venus, Bucksville, S. C., Boston, put into Charleston, S. C., in distress, November 12th.
Trenton, Georgetown, S. C., for Barbadoes, put into Charleston, S. C., leaky, November 12th.
Orient, Boston, for Pictou, N. S., went ashore near Sidney, N. S., October 24th, was condemned.
Nebraska, Chicago, Ill., for Milwaukie, Wis., sunk near former port, October 19th.
F. C. Clark, is a total loss, on Lake Michigan, October 29th
Sam Hale, is supposed to be lost on Lake Michigan, October 29th.
Pinta, put into Machias, Me., in distress, November 10th, was sold and condemned.

SCHOONERS.

Mary W., Rio Janeiro, for New-Orleans, was wrecked on W. coast of Cuba.
Forward (whaler), was lost in lat. 60 deg. 10 min. N., lon. 175 deg. 30 min. W., June 3d.
Oak Leaf, New-York, for Gardiner, Me., was abandoned in a sinking condition, November 1st.
Polly Price, Philadelphia, for Mobile, put into Baltimore in distress, October 27th.
Sarah, Boston, for Porto Rico, put into New-Bedford, Mass., in distress, November 3d.
W. Wright, foundered and sunk at sea, October 26th, lat. 37 deg. 20 min., lon. 73 deg. 30 min.
Betsey, Boston, for Bridgeport, Conn., was abandoned in a sinking condition, November 7th.
Kate Helen, Baltimore, for Plymouth, Mass., put into Newport, R. I., in distress, November 2d.
General Taylor, is ashore near Chicago, Ill., October 24th, will be a total loss.
Magnolia, was lost on Lake Michigan, October 28th.
Tempest, sunk near Chicago, Ill., October 31st.
Mary (Canadian), was lost on Lake Erie, October 16th, crew lost.
Ellen Gilmour, was wrecked on Lake Erie, November 8th.
J. P. Hale, wes wrecked on Lake Ontario, November ——.
Adeona (Br.), Bermuda, for Baltimore, put back in distress, November 1st.

New-Jersey Pilots.—The New-Jersey Commissioners of Pilotage held their regular monthly meeting at Jersey City, November 6th, when it was reported that our pilots, during the month of October, brought into port 54 vessels, of which 26 were boarded out of sight of land, and piloted out 51. The pilot boat Huldah B. Hall was reported to have been run into off Barnegat, on November 3d, and sunk, but the crew were saved. This is a serious loss to the pilots, as it was not insured. The business at Elizabethport is increasing very much since the commencement of the coal business there; nine vessels were piloted in there, and nineteen taken out. There was also a large number more which ran in and out without pilots.

THE NEW REVENUE CUTTERS FOR THE LAKES.

We have information from Messrs. Merry & Gay, of Milan, Ohio, that the contract for building six Revenue Cutters of 50 tons for service on the Lakes, has been awarded to them. These parties are well known as extensive and responsible shipbuilders. We are also in receipt of a letter from a correspondent, throwing a ray of light upon a system of favoritism, which, if practised at Washington, is exceedingly discreditable to the parties concerned.

November 27th, 1856.

Messrs. Editors,—When I called upon you in New-York, I made an allusion to a gentleman that had been superintending the repairs on the Cutter J. Campbell, and spoke of the specifications for the six new Cutters. I have learned that the author of the specifications is a Mr. Lingthall, who is connected with some of the Departments at Washington. About the time that the term for receiving proposals for the new Cutters was to expire, the gentleman superintending the J. Campbell visited Washington; when he returned, after a week or ten days absence, he had a list of every proposal that was thrown in. The bids run as high as $15,500 to $6,500 per vessel. The highest bid was from Boston; the next highest from New-York, and the lowest from a gentleman on the Lakes. The bid of the gentleman having the list of proposals was between $7,000 and $8,000.

Now, what seems to me not to be exactly ship-shape, is, that one party should know all about these proposals, and that he should be so close hauled to the western gentleman; and although the latter's proposal is lowest, I hear it reported that he has secured one or two of the Cutters to build. If they were awarded to him as the lowest bidder, I would say nothing, provided his bid was made in a fair way. The practice of fogyism and favoritism is so interwoven at Washington, that the word of a common citizen is considered as nothing.

Yours, respectfully,

——— ———.

If Messrs. Merry & Gay can build the Cutters for less than our builders on the Atlantic coast, and we think they can, we know of no reason why the contract should be awarded, in part, to any other party.

It will be observed, that from the defective nature of the specifications, and from the difference in prices for building and equipping vessels in various parts of the country, an extraordinary range of prices obtained in the proposals.

The Introduction of Bent Ship Knees.—The American Timber Bending Works are furnishing most practical evidences of usefulness in supplying shipbuilders in New-York with bent knees. We observe that the Bark Jane Daggett, built by Webb & Bell for Messrs. Dunham & Dimon, has had all her lower deck hanging knees, and partner knees between decks, *manufactured* at these works. The superiority of bent over natural grown knees has been proved by reliable experiments, and bent knees now bid fair for a general introduction to use.

MARINER'S JOURNAL.

BROWN'S ANCHOR PURCHASE.—The facility, ease, and diminished risk involved in the use of anchor gearing, constitute the best recommendation of any invention for this purpose. The wooden windlass, worked by hand-spikes, has been voted the rude device of time long passed, and numerous improvements, having in view the application of purchase gearing to revolve the horizontal windlass, have been adopted; still the old-fashioned type of this cumbrous machine has remained unaltered. Patent windlasses have multiplied until the nautical public have become bewildered in its knowledge of the just merits of succeeding inventions, and inferior descriptions of gearing have often been adopted rather than to risk a choice of "patents" for a better purchase.

For taking and letting-go an anchor we regard a suitable capstan as in every way superior to a windlass. We have examined Brown's Patent capstans, stoppers, and riding-bits, and do not hesitate to say that they appear admirably adapted to their purpose. This plan, though an English invention, is patented in the United States, and is under the agency of Capt. Wm. Skiddy, of New-York. It has been before the British public for about seven years, and before the American less than three, yet its manifest superiority over every other plan hitherto introduced, has commended its use on board of fifty ships in the British Navy, its exclusive use on all the vessels of the British Peninsular and Steam Navigation Company, the Royal Mail Steam Packet Company, General Screw Steam Shipping Company, Cunard Line, Austrian Lloyd's Steamers, Pacific Steam Navigation Company, Australian and Pacific Steam Navigation Company, Australian Royal Mail Steam Packet Company, African Mail Steam Packet Company, South American Steam Packet Company, and many first class merchant ships; also on board of the German, Spanish, Portuguese, Brazilian, Peruvian, Egyptian, Sicilian, Sardinian, Russian, and Venitian war steamers. In America it has been introduced on board of mail steamers in the New-York and Havre, Bremen and Liverpool lines. The frigate Niagara, the Great Republic, and other freighting ships of note have adopted this improvement.

A sketch of the manner of operating Brown's Anchor Purchase will be found on the outside of cover; we recommend our readers to inspect its merits. Capt. Higgins, of U. S. M. steamship Hermann, states that on one occasion, he hove in fifty fathoms of chain and weighed the bower-anchor in *nine* minutes, weather fine and no tide running. Three men have weighed a 1,600 lb. anchor, with $1\frac{1}{4}$ inch chain, twenty fathoms out, in *six* minutes, on board brig "William Skinner," lying in the East River, at New-York. Shipmasters using this anchor gearing recommend it in the strongest terms.

MODEL JURY RUDDER.—We have received a model and communication upon the subject of Jury Rudders, from Capt. Lawton, who claims to be

the original inventor. The model is very similar to the one described and illustrated in September number, as made by Capt. Babbage of the ship Wm. Frothingham. The model evinces genius and rare development in energy of character.

SIR: I beg leave to forward you, for the benefit of Commerce in general, a Model Jury Rudder, which was originated, constructed, and successfully used by me, and was instrumental in saving the lives of the passengers, crew, and officers of the ship "Warren," late of New-York, under my command.

The Warren was thirty-one days with her original, fifteen days without any, and sixty-three days with, and conducted by the Jury Hempen Cable Rudder, as per model, into the port of New-York, after a passage of 109 days from Glasgow, in the winter of 1850 and 1851.

The said Rudder was constructed from a ten inch cable, pig-iron, planks, chains, &c. The pig-iron, on the forward part and sides, was so placed as to sink the Rudder; the small rings were steering sail-boom irons, which answered as pintles and braces; the bridle-chains, with sliding thimbles, were from top-sail sheets; the guys from a seven inch hawser; the small blocks of wood, were placed on the guys, to prevent their being chafed asunder; the spar on the after part was to stiffen the Rudder, to which wheel-blocks were attached; the wheel ropes leading to a quarter bumpkin spar, thence to the wheel; the guys on the after part, with sliding thimbles, were for the purpose of steering the ship in heavy weather; the planks were two inches in thickness.

The Jury Cable Rudder is simple in its construction, having no bolts, spikes, or treenails to fasten it—it being secured with seizings or lashings—all of which can be accomplished by an ordinary seaman, there being no carpenters or smiths required. Should a ship be so situated, having no Hempen Cable, a rope of a smaller size will answer the same purpose, by double or treble flaking it, or parts of the standing rigging can be taken from different masts without injury to them. For the want of pig or railroad iron, parts of the bower or stream chain can be taken as a substitute. Should there be no planks at hand to line or sheath the said Hempen Rudder, parts of the bulk-heads may be taken, or any other thing that will answer.

The Jury Rudder, as per model, can be applied to steam, as well as sailing vessels.

I am, sir, your obedient servant,

JOB G. LAWTON,

Commander Ship John Fyfe, of New-York.

A YANKEE TO RAISE THE RUSSIAN FLEET SUNK AT SEBASTOPOL.—John E. Gowen, Esq., of Boston, who is now in Russia, has entered into a contract with the government of that empire to raise the ships-of-war and other vessels, fifty-two in number, which were sunk across the entrance of the harbor of Sebastopol, at the time of the siege, to prevent the British fleet from entering. No little reproach has been cast upon the engineers of the British Navy, for the failure to suggest and execute a plan to [illegible] these vessels soon after they were scuttled, which might have bee[illegible] and thus permitted the fleet to enter the harbor and destroy the [illegible] will be remembered that this American is the same, who, as contr[illegible] our own government, succeeded in raising the wreck of the U[illegible] steamer Missouri, sunk in the harbor of Gibraltar, after the f[illegible]

peated efforts of British engineers. Mr. Gowen's operations at Sebastopol commences next spring. In this relation we have a single remark to make. It will probably cost as much to sling these vessels by chains, for raising, as to raise them from the bottom after they are slung, it being a most difficult and expensive operation to get chains under a ship embedded in mud or grounded upon a rocky bottom. We say, therefore, that the invention denominated a "Wreck Finder," which we have described and illustrated on page 370, vol. 4, is one which, if it had been used on those fifty-two ships, would have obviated the necessity for Yankee enterprise in the matter and diminished the enormous expense, perhaps, one-half. The Russians might have raised their own ships at pleasure. We do not know whether or not this invention has been offered to the maritime public, by agents, for adoption, but we do know, that it is a very simple, cheap, and excellent one for the purpose, and should be used by every kind of craft liable from accident or design to sink in waters where raising is practicable.

Iron Masts Discarded.—The Belgian steamer *Belgique*, lying in New-York, has condemned her iron masts as unsafe and unsuitable, and removed them to substitute wooden ones. It is alleged that the sailors determined not to go to sea in her again unless they were taken out; they caused the ship to labor from top-weight, sprung top-masts, carried-away lanyards, sprung below deck, and Jack feared they might break short off and fall through the ship. These iron masts are very heavy and appear to be strongly made. Our own opinion is, that the iron hull is as much at fault as the masts, perhaps more so. The bow and stern are very heavy and overhanging, and the ship is narrow—in fact, a boiler-maker's model. Better to have paid a competent nautical architect for a suitable model, and thus secured a basis for utility and profit. What is such a shape as that of the *Belgique*, but an imposition on the owners and the public, in comparison with a sea-going form ?

Convict Shipbuilding.—California is converting her convicts into ship-carpenters. A three-masted schooner called the *Estelle*, has recently been built at the State Prison, under the superintendence of Capt. E. W. Travers, and, with the exception of two men, all the hands engaged in her construction were convicts. From the keel to the cabin, the spars and the sails, the entire labor is the result of convict labor. The timber used, aside from a little second-hand belonging to the old steamer H. T. Clay, is pepper-wood. and was cut from the land close by the prison. It is said to be very hard, durable, and susceptible of a beautiful polish. This craft has been completed in four months, is of good model and strong build, costing only $8,000, but valued at $12,000. We don't like the idea of bringing convict labor into rivalry with that of honest mechanics.

The Collins' Steamers to Reduce their Speed.—The New-York

Journal of Commerce learns, that since the Government has decided to reduce the pay to the Collins' Line, on account of the mail contract, the Company have resolved *to reduce their rate of speed.* This measure will lessen the running expenses, it being calculated that more than $200,000 may be saved, thus compensating fully for the deduction submitted to. It is claimed that there is nothing binding in the contract as to speed, but simply that the vessels "shall be built for high speed." We would remark, that had these vessels been built for *profit,* not only could this important end have been accomplished, but speed also. The dodge, if made, would be a very lame one, and altogether discreditable to the Company. A line of steam vessels can be built to cross the Atlantic in *seven* days, and pay, too; but the mind to design them will be *mechanical.*

A New Trade for Yankee Coasters.—Having the best coasting vessels in the world, and being at all times able to spare a few for new enterprises, to say nothing of our readiness to build any number for which a market may be found, it is with an eye to usefulness that we point out to our readers a new demand abroad for shipping which they are well calculated to supply. The French colony of Algeria, on the southern coast of the Mediterranean sea, is destined to become an extensive trader with France and other countries of Europe. The policy of the French government toward the colony is of the most liberal kind, it being determined to make Algeria a stepping-stone to the wealth of Northern Africa. The Paris *Moniteur* contains a decree, founded on a report from the Minister of War, tending to encourage the establishment of foreigners in Algeria, and to induce foreign vessels to enter into the coasting trade in that colony. By this decree foreign vessels of eighty tons and upwards may be nationalised, and trade exclusively on the coasts of that colony under the French flag and free of duties. Vessels applying for this privilege must be perfectly fitted out, and well found in stores of every kind. Algiers formerly had a considerable trade in the exportation of corn, dates, silks, copper, handkerchiefs, rugs, feathers, &c. The manufactures are carpets, silks, cotton, woollen, leather, and coarse linen. Most of the maratime trade has long been in the hands of a company at Marseilles in France. It is now to be enjoyed by all vessels under the French flag.

Draughting Sweeps.—No architect or ship-builder can afford to without a set of these useful instruments. To all who may be in such, and desirous to procure a first rate article in this city, we rec them to the establishment of Mr. J. Prentice, Mathematical In Manufacturer and Importer, No. 7 Chambers-street, east of Broad- may add, that every variety of Drawing Materials may be found place.

NOTICES TO MARINERS.

Long Point Cut.—The entrance to the Long Point Cut has nearly closed up, and it is a dangerous place for a vessel to attempt to enter at any time. In gales of wind it should be avoided by all vessels. Besides being nearly closed with sand, there is a great current running there in gales of wind, making a tremendous sea, and the risk of life and property in case a vessel strands there, is very great. Help can reach them only from the main land, some five miles off, and then only in good weather. In all westerly gales, when it is necessary to make a shelter, Long Point affords a good safe anchorage. The shoal off Long Point has extended down much farther eastward than in any previous year, so that many vessels have run on it this season in broad daylight. Vessels in seeking shelter under Long Point, should give the shoal a good berth and run well in past it, up in the bay north-west, under the wooded part of the land, and come to in from six to seven fathoms water; good clay bottom. They can lie there in all weathers, with the wind from all points to westward, and from south-east round to north-west if anchored in that water well inside of the Point. Most all vessels anchor close to the Point to get good holding ground.

The Calcutta Gazette says: The Governor-General in Council is pleased to recognize the appointment by the Consul-General of the United States for British India, as Consul of the United States for the port of Singapore. G. F. Edmondstone,
Secretary to the Government of India.

U. S. *Consulate General, Calcutta, August* 19, 1856.—*Notification.*—In virtue of authority vested in me by the President of the United States, and with the sanction of the Governor-General of India, I hereby appoint Thomas Biddle, Jr, Esq., Consul of the United States for the port of Singapore, and invest him with all the rights and privileges appertaining to that office.

Charles Huffnagle,
Consul-General of the United States for British India.

Charity Shoal, Lake Ontario.—The following are the bearings of the different head-lands from the Day Beacon which has just been placed on the shoal by Capt. Malcolm, for the U. S. Light-house Board. It is twenty-four feet high, and can be seen from the deck of a vessel five miles. Tibbet's Point Light, N E. by E.; Grenadier Island, east end, E.; Gallou Light, S. by E. ½ E.; Real Ducks, east end, S. W. by S ½ S.; Real Ducks, west end, S. W.; Pigeon Island, N. W. by W.; Simcoe, or Nine Mile Point Light, N. N. W.; Jordand's Point, N. E. by N. This shoal is one-fourth of a mile long, about four hundred feet wide, and has upon it at the present stage of the water from three to ten feet.

The Light-ship at Long Point, Lake Erie, will be withdrawn from that station, for the purpose of being repaired, on the 20th inst., and that no light will be exhibited until the commencement of navigation in 1857.

The Spar Buoy on Napatree Point, entrance to Fisher's Island Sound, is not in its proper place, and has become so water-logged that it is with difficulty it can be seen at high water. It should be attended to immediately.—*Providence Journal, Nov.* 13.

Commander H. S. Stellwagen, United States Navy, Assistant in the Coast Survey, has discovered a new shoal in lat. 41 27 N. lon. 69 51 W, lying in the middle of the ship channel between Great Round Shoal and M'Blair's Shoal. The least water found was 12 feet, and it is thought that a minute survey may possibly develope the existence of spots having a less depth.

A shoal was also found eastward from the northern extremity of Little Round Shoal, with as little as 13 feet. It lies in lat. 41° 31′ 15″ N., lon. 69° 52′ 5″ W.

The existence of a very narrow ridge with only 14 feet water, was detected at the northern extremity of Davis' Bank, Sankaty Light, bearing W. ¼ S.; distant 15½ nautical miles.

Two miles due north of the last mentioned Shoal, a ridge was found stretching about a mile in a N. W. and S. E. direction, having within a small space upon it only 18 feet water.

The season's operation of Commander Stellwagen yet in progress E of the Cape Cod peninsula, have determined the non-existence of Crab Ledge and Clark's Bank, but a large extent of shoal water with soundings in 9 and 15 fathoms was found S. W. and S. S. W. from George's Shoal, on which no soundings have yet been indicated on published charts.

A Spar Buoy, black, No. 1, has been placed on Oak's Rock, off Cape Ann, between Thatcher's Island and the main land, in 20 feet water. The buoy is on the east side of the rock, which has but 4 feet of water on it at low tide. It is to be left on the port hand going north.

The following magnetic bearings are given from this buoy: N. Light, Thatcher's Island, E. by S. ¾ S.; Straitsmouth Inner Light, N. ¾ E.; Dry Salvages, N. E. by N.

By order of the Light-house Board.

Boston, November 1, 1856.

Changes in Buoys marking the approaches to Portland Harbor.—The spar buoys on "Vapor Rock," "Old Anthony," and "Taylor Reef," have broken adrift. Those on "Old Anthony" and "Vapor Rock" are discontinued; and will not be replaced; the one being covered by 22 feet and the other by 15 feet of water at low tide. Small vessels can pass over either at any stage of tide, and vessels of heavier draft should always pass to the eastward of the "Hue and Cry" and "Alden's Rock," which are buoyed and afford sufficient guides.

The buoy on "Taylor Reef" will be replaced immediately, when vessels of light draft may pass inside or outside of it, as convenient.

A spar buoy has been placed on "Brimstone Ledge," on the northern side of Great Hog Island; the north-east point of Great Hog Island bearing, by compass, S. E. about one-half mile distant. The buoy is about 50 feet north of the ledge, in 10 feet water at low tide; over the ledge there is not more than two feet of water at mean low tides. This buoy is painted red, and marked No. 2, and is intended to aid the navigation to Freeport, Harpswell, and Portland.

By order of the Light-house Board.

Portland, October 29, 1856.

Lights of the Dardanelles at Cape Hellas and Gallipolis.—The following official information has been received at the office of the Light-house Board, and is published for the benefit of mariners:

A telegraphic dispatch, dated yesterday, has been received from Capt. Spratt, R. N., C. B., commanding H. M. Surveying vessel Medina, at Constantinople, stating that by order of Rear Admiral Lord Lyon, G. C. B., &c., the following lights are permanently established in operation in the Dardanelles, viz:

1. A revolving light of the natural color, eclipsed once every minute, on Cape Hellas, forming the northern point of entrance from the Archipelago.

2. A revolving light of the natural color, eclipsed twice every minute, or once every half minute, on the west point of Gallipoli, in lieu of that on the east point of that Cape.

Such further particulars, as soon as they are received, will be given hereafter concerning these lights, as may appear necessary for the information of mariners.

By command of their Lordships.

John Washington, *Hydrographer.*

Hydrographic Office, Admiralty, London, September 4, 1856.

By order of the Light-house Board.

Washington City, September 29, 1856.

St. Petersburg and Cronstadt Clearances.—St. Petersburg advices mention the following important decree of the Minister of Foreign Affairs, published in the Handelszeitung, in relation to the custom-house passes for vessels leaving the ports of St. Petersburg and Cronstadt:

By virtue of a decision of the Minister of Finance, the Department of the Foreign Office for the Affairs of Commerce and Custom Dues in St. Petersburgh and Cronstadt, make known to all concerned, that captains of ships departing thence during the season of the navigation may receive their pass certificates, either as formerly at the custom house office at St. Petersburg or Cronstadt, provided, however, they produce a certificate from the custom house authorities of this city that neither difficulties to their departure, nor on the part of those to whom the ship shall be addressed, shall exist. These attestations may, according to the wishes of the captains or owners of the goods laden in the vessel, be demanded by means of the telegraph, under the condition, however, that the amount of the cost for the requisition and fulfillment of the request be paid by those persons making them.

Princes Channel, Entrance to the Thames.—Additional Light.—Official information has been received at the office of the Light-house Board, through the Department of State, that, pursuant to the intention expressed in the advertisement from this house, dated 5th June last, a Light-vessel, having the words "Princes Channel" painted on her sides, has been moored on the north side of this channel, in 3½ fathoms low water spring tides, with the following marks and compass bearings, viz.

Monkton Beacon, nearly midway between St. Nicholas Preventive stations, but rather nearer to the western one, S. ½ W. Westerly. Minster West mill, its apparent length to the eastward of Powell's Belfry, S. ½ E. Shingles Beacon, E. by S. ½ S. Tongue Light-vessel, S. E. by E. ½ E. N. E. Tongue Buoy, S. E. ¾ E. North Pan Sand Buoy, West. Girdler Light-vessel, W. by N. ¾ N.

A red revolving light, showing a flash at intervals of 20 seconds, will be exhibited from this vessel every night, from sunset to sunrise, on and after the 1st October next.

Caution—Mariners are to observe that no vessel is to be navigated to the northward of this Light-vessel.

Washington City, Oct. 18, 1856.

Range Lights for Channels in New-York Bay.—In compliance with previous notice, the Range Lights for the channels through New-York Bay will be exhibited at sunset on the evening of the 1st of November, and nightly thereafter, from sunset to sunrise. They are located as follows, viz.:

Range Lights from East End of Gedney's Channel, between Sandy Hook and Flynn's Knoll.—Two fixed lights located near Point Comfort, New-Jersey. The front light will be exhibited from a lantern on the keeper's dwelling, which is located near the beach, and painted white, with the top of the lantern black. The rear light is located three-quarters of a mile distant from the front one, and will be exhibited from a tower painted white, with the head of it and lantern black. The keeper's dwelling is north of it, and painted white. The front light is 40 and the rear one 76 feet above the mean level of the sea, and should be seen, under ordinary state of the atmosphere, outside the bar. During the day the front building can be readily recognised from other buildings in the vicinity by the lantern on its centre, and the rear one by the lantern of the tower being projected on the sky above the trees.

Main Ship Channel Range Lights.—Two fixed lights located on the New-Jersey shore, west of Highlands of Navesink. The front light will be exhibited from a tower near the beach, painted with two white and one red horizontal bands, and the roof of the lantern also of the latter color. The keeper's dwelling is west of the tower, and painted white. The rear light is located on the north side of Chappel Hill, one and a half mile distant from the front light, and will be exhibited from a lantern on the keeper's dwelling. The dwelling is painted white, and top of the lantern red. The front light is 60 and the rear one 224 feet above the mean level of the sea, and both should be seen, under ordinary state of the atmosphere, the entire length of the range line. During the day they can be readily recognised by the shape and colors of the tower of the front light, and by the lantern of the keeper's dwelling, and isolated portions of the rear one. It is about one mile east of Pigeon Hill.

Swash Channel Range Lights.—Two fixed lights located on Staten Island, N. Y. The front light will be exhibited from a tower near the site of the "Old Elm Tree" Beacon, painted with two white and one red horizontal bands, and the roof of the lantern also of the latter color. The keeper's dwelling is south of the tower, and painted white. The rear light is located on a hill near New Dorp, about one and three quarters mile from the front light, and will be exhibited from a lantern on the keeper's dwelling. The dwelling is painted white, and the top of the lantern red. The front light is 59 feet and the rear light 189 feet above the mean level of the sea; and both should be seen, under ordinary state of the atmosphere, well outside of the bar at Sandy Hook. During the day they can be readily recognised by the shape of the tower, and colors of the front light, and by the lantern on the dwelling, and isolated position of the rear one.

Sailing Directions.—Masters of vessels intending to enter by Gedney's Channel, and Main Ship channel, around the S. W. spit buoy, should run on a N. W. ¼ W. course from the light-vessel for the black and white perpendicular-striped nun buoy at the outside of Gedney's Channel, and from it W. by N. through the channel, keeping between the buoys until the Range Lights near Point Comfort, New-Jersey, are in one, when haul up for them, and continue upon the range until the two main channel lights are brought in range, which will also be shown by the main light at Sandy Hook being a little to the southward of the West beacon.

From this point the Main Ship channel range will take them up clear of the "West Bank" and Craven's Shoal.

Masters of vessels intending to pass through the Swash channel, can bring the lights in range outside the bar, and run for them until the red can buoy, No. 8, (which marks the upper middle) is passed, or until the Main Ship channel range is on, when haul up on that range until clear of the "West Bank."

Vessels drawing more than 17 feet should not be taken through this channel on the range line at low water.

A foot more water may be carried through this channel, after crossing the bar, by keeping a little to starboard, and opening the front light clear of the rear one.

The Swash channel range line indicates, by the most recent survey, 18 feet at low water.

By order of the Light-house Board.

New-York, October, 27, 1856.

Cape Race Light, Newfoundland.—Official information has been received at the office of the Light-House Board, through the Department of State, that the light-house recently erected upon Cape Race, (Newfoundland,) will be lighted, and will continue to exhibit a fixed white light, from sunset to sunrise, on and after the 15th of December, 1856. The light will be visible to seaward from N. E. by E., round by the S. E. and south to west. The light is elevated 180 feet above the mean water level of the sea, and may be seen in clear weather 17 miles from a ship's deck. The tower is striped red and white vertically, and stands close to the old beacon, which has been cut down. The beacon is white. The light-house is in latitude 46° 39′ 12″ N., longitude 53° 2′ 38. W. All bearings are magnetic. Var. 24° W.

Washington City, Oct. 10, 1856.

N. B.— A toll will be levied upon vessels benefiting by this light.

Caution to Shipmasters not to omit the use of the Lead.—The following letter is exhibited in the Underwriter's Rooms, Liverpool :—

Office of Committee of Privy Council for Trade,
Marine Department, Whitehall, Nov. 3, 1856.

Sir,—Referring to the letter from the department, dated the 20th October last, on the subject of the culpability of shipmasters in neglecting to use the lead, I am directed by the Lords of the Committee of Privy Council for Trade to request that you will bring to the notice of the Liverpool Underwriter's Association the two following instances of wrecks which have occurred within a recent period, and in which, as it has been reported that the accidents were attributable, in a great measure, to the neglect of this precaution, my lords have suspended or cancelled the certificates of the masters of the vessels. The first case is that of the Zebra screw steamer, which was lost near the Lizard Point on the 22d of July last. In reporting upon the case, the court, consisting of Mr. Mansfield, the stipendary magistrate at Liverpool, and Captain Schomberg, emigration officer at the port, stated that they considered the omission of the use of the lead a very grave one, and one of the main causes of the loss of the ship. My lords, therefore, suspended the certificate of Mr. W. E. Betts, the master, for 12 months.

The second case is that of the Brunelle, stranded near Girvan, on the 14th September. The local marine board of Greenock conducted the inquiry, and reported that the master, Mr. Alexander L. Black, was guilty of misconduct, by neglect of duty, tending to the serious damage of the ship, one important element in such neglect being the omission to use the lead. My lords in this instance cancelled Mr. Black's certificate of service, and sanctioned his going up for examination for a certificate of competency after a lapse of three months, in accordance with the recommendation of the local marine board.

My lords trust that the steps taken in these cases will tend to impress upon shipmasters the necessity of a due observance of the simple and obvious precaution which has been so much neglected. I am, Sir, your obedient servant, JAMES BOOTH.

To the Secretary of the Underwriter's Association, Liverpool.

Gay Head Light-house, Martha's Vineyard Sound, Mass.—In conformity with the notice dated July 22d, 1856, the new light at Gay Head will be exhibited at sunset on December 1st, 1856, and will be kept burning during every night thereafter from sunset to sunrise.

The focal plane of the light is 43 feet above the ground and 170 feet above the level of the sea. The tower is of brick, colored brown, and stands about 12 feet from the centre of the rear of the dwelling-houses, with which it is connected. The lantern is painted black. The dwelling-houses are brick color. The illuminating apparatus is a revolving Fresnel lens of the first order, showing a bright flash of the natural color every ten seconds. The light should be visible, in good weather, from the deck of a vessel 19 nautical or 21 statute miles.

The light now shown at Gay Head will be discontinued from the above named date, and in the course of the next season the old tower will be removed.

By order of the Light-house Board,
Boston, Mass., Oct. 22d, 1856.

Ireland—North Coast.—Rathlin Island Light-house.—Official information has been received at the Office of the Light-house Board, that the Port of Dublin Corporation has given notice that a Light-house has been erected on Rathlin Island, County Antrim, from which lights will be exhibited on the night of the 1st November next, (1856,) and thereafter will be lighted during every night, from sunset to sunrise. The Light-house tower is built on the northeast point of Rathlin Island, situated in latitude 55° 18′ 10″ N., and longitude 6° 10′ 45″ W., bearing from Rhins of Islay light, S., distant 25½ nautical miles; from Mull of Cantire light, W. N. W. ½ N., distant 13 nautical miles; from Corsewall Point light, N. W. ¾ N., distant 39 nautical miles; from Maiden Rock South light, N. ½ W., distant 27 nautical miles.

As an additional means of marking this position, a lower light will be shown, of which the lantern is placed at the base of the tower, on its eastern side. The upper light, in the lantern of the tower, will be revolving, giving a bright light during fifty seconds, and being eclipsed durin- seconds—the periods of light and darkness following in regular succession. It will be visi- seaward between the bearings of S. E. ½ S., round by the eastward to N. E. by N., also through the channel westward of Rathlin Island from E. N. E. ½ N. to E. ¾ N., and will red on the line of the Carickavanan Rock. The light is 243 feet over the level of water, and in clear weather may be seen within the distance of 21 miles.

The lower light will be fixed, of the natural appearance; and, being level of the upper, will be seen as a separate light within the distance of ward between the bearings of S. E. by S. and N. N. E. ½ E., and will the channel westward of Rathlin Island. The tower is circular, the ball over the dome. A red belt will be painted under the projec are magnetic. Var. 28° W.

Office Light-house Board, October 30, 1856.

Light-house and Beacon on Wangerooge Island, West side of the Entrance to the River Weser.—Official information has been received at the Office of the Light-house Board, through the Department of State, that the Government of Oldenburg has given notice that a light would be exhibited on the 1st of October, (1856,) from the new tower recently erected on the eastern extremity of the Island of Wangerooge, in latitude 53° 47' 26" North, longitude 7° 54' 14" East of Greenwich, as a substitute for the old light at that place.

The light is a 4th order revolving one, on the system of Fresnel, showing a bright flash once in every two minutes; it is elevated 100 feet above the level of the sea, and should be seen, under ordinary states of the atmosphere, 14 nautical miles.

A beacon is erected on the sand hill 1700 feet E. by N. from the new tower, making the light-house, beacon, and Key buoy (the first buoy) in range.

The Light-ship No. 1, in the Weser, is placed E. ½ S. from the beacon, in range with the beacon and the large church steeple on the western part of the island.

Washington City, October 27, 1856.

East Coast of Brazil.—Intermittent Light at Macrio.—Official information has been received at the Office of the Light-house Board, that the Brazilian Government has given notice, that on the 1st day of July last, a new light was established in the port of Maceio, capital of the province of Alagoas, on the east coast of Brazil. The light is intermittent, with a flash every second minute. It shows a steady light of the natural color for 70 seconds; it is then eclipsed for 16 seconds; then a bright flash for 12 seconds; another eclipse for 22 seconds; and then again the steady light; thus completing its phases in an interval of 2 minutes. The illuminating apparatus is a catadioptric lens of the third order. The light is placed at an elevation of 208 feet above the level of the sea, and should be visible, in clear weather, at a distance of 22 miles. The light tower stands on the western point of the hill, which overhangs the City of Maceio, on the spot where a powder magazine formerly stood, in latitude 9° 39′ 18″ S., longitude 35° 41′ 24″ West of the meridian of Greenwich.

Washington, November 10, 1856,

The Kattegat—Jutland.—Partial Eclipse of the Skagen or Skaw Light.—Official information has been received at the Office of the Light-house Board, that the Royal Navy Department at Copenhagen has given notice, that the new Light-house building on the Skagen or Skaw Point, will attain such an elevation during the present year, as will partially prevent the actual light on that point from being seen in the direction of Skagen Spit, which extends from the Skagen Point to the eastward. Mariners are hereby cautioned thereof.

Washington, D. C., November 10, 1856.

Light-house at Absecom, New-Jersey.—Notice is hereby given, that a new Tower and keeper's dwelling, at Absecom, N. J., are now nearly completed, and that on or about the 15th day of January, 1857, *a fixed white light* of the first order will be exhibited therefrom. The tower is of brick, unpainted, and will be surmounted by an iron lantern, painted black. The focal plane will have an elevation of 167 feet above mean tide, and the light should be seen, under favorable circumstances, from the deck of an ordinary sailing vessel, at a distance of about 20 nautical miles. The approximate position of this light, as deduced from the Coast Survey charts, is—latitude 39° 22' North, longitude 74° 26' West from Greenwich. Due notice will be given of the precise date when the light will be first exhibited.

By order of the Light-house Board.

Philadelphia, November 10, 1856,

Note.—The notice issued on the 30th September, gave the latitude 30° 42' North, which should have been 39° 22' North.

England—South Coast.—Motherbank Buoy.—The following official information has been received at the Office of the Light-house Board: The Lords Commissioners of the Admiralty having directed a *Black Buoy* to be moored off the outer Spit of the *Motherbank*, to mark the channel to the Pitt Coal Depot, notice is hereby given, that the following marks and bearings denote its position, and that it lies in 30 feet at low water, ordinary spring-tides, viz: The second westernmost of the six clumps of trees on Pottsdown Hill, in line with the Surgeon's House (white) at the eastern end of Haslar Hospital, bearing E. N. E. ½ N. The Fir Gardens on Pottsdown Hill, in line with the western end of Anglesea Terrace, bearing N. E. ½ N. The highest Church at Ryde, in line with the outer end of Ryde Pier, (the Church is large, slate roofed, and has a small spire or cupola on its western end,) bearing S. S. W. ¾ W. Old Castle Point, N. W. by W. South Sea Castle, E. ½ N. Thus the channel to the Pitt Coal Depot, for ships from the westward, will lie between the *Black Buoy* and the White Western Buoy of the Sturbridge, while those coming from the eastward will pass between the East Buoy of the Sturbridge and the chequered Sand Head Buoy to the southward of it. All bearings magnetic.

Washington, D. C., November 11, 1856.

SCOTLAND—WEST COAST.—PORTPATRICK HARBOR LIGHT.—The following notice to mariners has been received at the Office of the Light-house Board: The Lords Commissioners of the Admiralty having directed that the inner Light-house at Portpatrick be re-lighted, notice is hereby given, that on and after the evening of the 15th day of October next, (1856,) a fixed light of the natural color will be exhibited from the inner Light-house in Portpatrick Harbor, in the same position as formerly, namely, in latitude 54° 50' 28" N., longitude 5° 7' 0" West of Greenwich, nearly. The light will be of the sixth order; it will stand at a height of 44 feet above the mean level of the sea, and will be visible from the deck of a ship at a distance of 8 miles in clear weather, through an arc of 180° of the horizon, open to the westward or to the seaward. The tower is of stone, 30 feet high, and painted white; it stands at the southeast angle of the harbor, and at 130 yards within the outer Light-house at the pier-head, which is not lighted.

Washington, D. C., November 11, 1856.

Capt. Talbot, of steamer Louisiana, at New Orleans, August 17th, from Galveston, reports the light-ship on Ship Island Shoal gone.

On or about the 1st November next, the illuminating apparatus now in use at Plum Island Light-house, New-York, will be removed, and a fourth order Fresnel lens substituted for it, to show a flash of 30 seconds duration, with an interval of 30 seconds.

By order of the Light-house Board. A. LUDLOW CASE.

New-York, September 23d, 1856.

Repairs of the tower and lantern of the Black Rock Light-house, Connecticut, will be commenced on the 28th of August, and the light heretofore exhibited will be then discontinued. A small light will be shown from the top of the tower nightly until the repairs are completed, when a Fresnel lens of the third order, to illuminate 270 degrees, will be placed in the lantern.

By order of the Light-house Board.

New-York, August 20th, 1856.

DISASTERS ON THE LAKES.

THE shipping on the Lakes has suffered severely, during the past month, from the numerous heavy gales. It is estimated that nearly 200 sail of steam and sail vessels have been either totally or partially wrecked, in a period of 30 or 40 days. More than 100 lives have also been lost. Such an extended list of horrible disasters should lead to the adoption of every measure to avert them, so far as possible, in future. The Government should discharge its duty in completing the harbors.

We give place to the views of a correspondent, whose knowledge of Lake Navigation will not be questioned in the West:

DETROIT, November 12th, 1856.

The steam and sail vessels built during the past ten years have been generally too weak for their tonnage—too shallow in the hold—not much more than half fastened, and often overloaded. Hence, the numerous losses by foundering of propellers and sail vessels, and the endless number of vessels springing a leak on the lake. Most of the collisions [illegible] from the ignorance of the officers of one or both colliding vessels, and the general negl[illegible] to keep up proper lights. The lake commerce has increased so rapidly that there [illegible] great deficiency in the amount and number of able, efficient officers to man the ves[illegible] part of these evils can and should be remedied with deep water to our harbors, stron[illegible] good-modeled vessels, and able officers. I think the losses on the lakes [illegible] at least one-half. I hope the late disastrous experience of ship-own[illegible] to remedy all within their power.

Respectfully,

OUR STATE ROOM.

THE BOTTOM OF THE OCEAN.—Lieut. M. F. Maury, U. S. Navy, in a recent lecture at the Brooklyn Athenaeum, gave a lucid description of the bottom of the ocean, as discovered by Lieut. O. H. Berryman, in his late transatlantic survey for the bed of the Oceanic Telegraph. The wonders of this great discovery, and its adaptation to the no less wondrous telegraph, were dwelt upon with much enthusiasm.

Until recently, all was conjecture about the depth and bottom of the sea. It was usually thought that the height of the mountains on the earth might be accepted as the measure of the depth of the sea, and the character of the bottom of the ocean was left entirely to the fancy of poets. But a view of the bottom, shows no dead men's bones, no wrecks, no treasure. There rests, in a perfect state of composure, under a layer of still water, a soft cushion of the remains of animalculæ, and though these remains have been lying there for ages, they are as perfect as if just created. Not a particle of sand or gravel intermingles among them. But as if to increase their softness, *volcanic ashes* are there sprinkled under the pressure of 400 atmospheres, yet as soft as the downy beds of royal chambers. There are no abraiding forces there, no friction, but all is soft and motionless, and wires once laid there, will remain forever—it was made for a submarine telegraph.

It would soon put a belt around the globe, and the question will then arise, what will be done about Sunday? In some parts of the world there will be two in a week, and Sundays generally will become confused. If the telegraph offices in all parts of the world close on Sunday, news arrangements will be constantly interrupted and delayed.

And when the international telegraph is completed, it is hoped that the first message from this country will be: "The people of the United States to the princes and potentates of the old world, greeting: Peace to every nation, trade, commerce and Christian intercourse with all people."

The lecturer exhibited a model of Lieut. Brookes' sounding shot, explained its working, and paid a just tribute to its inventor.

The sounding apparatus used by Lieut. Berryman was a modification of Lieut. Brookes'. Lieut. Berryman adapted the *quills* of Lieut. Brookes' to a *lead* of his own, (Berryman's) invention, and it was by this contrivance that he achieved one of the greatest discoveries of modern times.

RELIEF OF THE PACIFIC SQUADRON is much expedited by a new order from the Hon. Secretary. The entire crew of the *St. Mary's* is to be relieved across the Isthmus, and the following officers have been ordered to join her:

Commander—C. H. Davis; *Lieutenants*—R. H. Wyman, J. S. Maury, J. T. Walker, D. P. McCorkle, T. T. Houston; *Master*—W. H. Ward; *Surgeon*

—J. W. Taylor; *Assistant Surgeon*—Stewart Kennedy; *Purser*—W. A. Ingersoll; *Passed Midshipmen*—J. G. Mitchell, C. F. Thomas; *Midshipmen*—J. C. Morley, Le Roy Fitch; *Boatswain*—P. J. Miller; *Carpenter*, E. A. Cassidy; *Gunner*—L. K. Ellis; *Sailmaker*—H. W. Frankland.

A newly shipped crew is to be ordered in the same way.

We are glad to observe this sign of the times in the desire of the Department to fill its contract with enlisted men. It is only by such means that the difficulty of procuring sailors for our Navy can be overcome, while the excuse from the Department has heretofore been the very cause of the difficulty, viz.: that others cannot be shipped to fill their places. Discharge men punctually on the expiration of the time they have shipped for, and they will be ready to ship again.

THE SLOOP OF WAR PORTSMOUTH.—This ship arrived at Batavia, East Indies, on the 7th August, only 95 days from Norfolk. After leaving the Cape of Good Hope, for 21 days she averaged 220 miles per day. It is worthy of note that the *Portsmouth* is the first U. S. man-of-war that in her outfit entirely *dispensed with the spirit ration by the voluntary arrangement of the crew.*

Commander—Andrew H. Foote; *First Lieutenant*, Wm. H. Macomb.

The *Supply* is on her way to the United States with another load of *camels*.

The *Resolute* sailed from New-York on the 13th ult. The following is a list of her officers:

Lieut. Commanding—H. J. Hartstein; *Lieutenants*—C. H. Wells, E. K. Stone, H. Davison; *Surgeon*—Robert McCoun; *Master*—J. G. Walker; *Secretary*—T. A. Otis.

The *Mississippi* and *Falmouth* are in a progressive state of repair.

PORTSMOUTH, N. H.—Orders have been given for the repair of the *Constitution* and *Vandalia*; and the *Franklin* is to be *propellerized.*

At Gosport Navy-Yard, Portsmouth, Va., want of work has caused the necessary discharge of a large number of workmen.

The *Roanoke* is nearly ready to proceed on her trial trip.

TREATY WITH NICARAGUA.—The *New-Orleans Crescent* states that the treaty of friendship, commerce and navigation, concluded between Nicaragua and the United States, in June last, provides for equal commercial privileges in each country to the citizens of the other; the two parties to treat each other on the footing of the most favored nations; citizens of each republic to enjoy in the territories of the other the right of succession to personal estates by will or otherwise, and the free disposal of personal property of every sort; and to hold and possess any real and personal

estate without changing their national character. The rendition of fugitives from justice is also provided for.

The *Charleston Courier* says, that a model has been furnished from proportions and dimensions that have been well tested and are now approved. The proportions represented by the model for a steamship (side wheel) give —length, 260 feet; depth, 27 feet; beam, 33 feet; burden, 1,900 tons, government measure.

The builder and contributor of this model—a successful and responsible contractor and ship-builder—is ready to guaranty that such a vessel, fully ladened and furnished for a voyage to Europe, will enter any port with fourteen feet of water.

If the figures are correctly given, we have no hesitation in saying, that no amount of responsibility will suffice to accomplish what is therein proposed, the elements of success are not to be found in the dimensions given. —Eds.

Deaths.—Lieutenant Charles W. Aby, U. S. N., at Aspinwall, 16th September.

First Lieutenant George Adams, U. S. Marine Corps, at Flushing, N. Y., on 21st ult.

Lieutenant Joseph S. Day, U. S. N., near Washington, on 3d ult.

Gunner John Martin, U. S. N., in Brooklyn, on 5th ult.

Sea Soundings by Peter the Great.—The following communication from the Russian Consul-General of this city will doubtless be read with interest, on the subject of sea soundings. We commend the merits of the sounding apparatus described to our Nautical readers.

New-York, *November 25th*, 1856.

Messrs. Editors.—Your article in the last Magazine, on the deep soundings of the sea, was read by me not only with great interest, but inexpressible astonishment, that so much labor, ingenuity, contrivance, and experiment, should have been wasted to get at the mystery, which was solved more than a century back, in a manner so satisfactory with respect to simplicity, economy, facility, expedition, and infallible accuracy, as to leave the final result obtained in "Brookes' Deep Sea Sounding Apparatus" at an immense distance in the rear. Peter the Great did actually sound the Caspian Sea to the depth of over a thousand fathoms with great ease and most complete success, as recorded and specially described in his History, by Perry, his assisting Naval Engineer, a Scotchman by birth, whose work, the best of the kind it was my lot to peruse, was, soon after the Czar's demise, published in London.

The method devised by the Czar himself is simply this. A weight chosen, *ad libitum*, as to metal and form, has a suitable cork attached by claws, such as are used to lift the iron block in driving wooden piles, and of course the moment it strikes the ground, the cork is disengaged and flies up to the surface. The rate of the descent, always equal to that of the ascent, being previously ascertained with mathematical precision in experiments on shoaler depths, the lapse of time between the weight's immersion and the rising of the cork, gives the true depth with the greater exactness, as it is wholly exempt from all those variations, which are caused inevitably by the under currents and vibrations of the twine. The claws may be so fixed as to strike the ground simultaneously with the weight, catch up some of the dirt, rise with the cork, and thus reveal the secret of the submarine geology. Any objection to this admirable method can only be captious, in the face of the fact that it has been practically tested, and its principle is immutable in itself, it being the same for ten as for one thousand fathoms, by the very laws of nature.

Alexis Eustaphieve.

LITERATURE AND THE ARTS.

MAP OF THE STARS, WITH BOOK OF DIRECTIONS, by James H. Brownlow, Teacher of Practical Navigation and Nautical Astronomy, at Thom's Nautical Academy, 184 Cherry-street, New-York.—This is one of the simplest and most efficient aids to the navigator, in finding a ship's position at sea, that has ever been published. The Map comprehends those stars which are most important to the navigator, some of which will be visible to him in whatever part of the world he may be placed, and if generally employed for determining time and latitude, a great deal of anxiety would be saved. Any seaman may readily find the principal stars in the heavens, and learn their names. All delineations of the figures of the Constellations are omitted, and in their places lines are drawn between the brightest stars, forming figures more easily imagined in the heavens. The Book of Directions gives simple rules for using the Map—such that children at schools can be taught them—and we would earnestly invite the attention of teachers to this new publication. It contains introductory remarks on the planetary systems, explanations of the leading terms used in Stellar science, rules for adjusting the Map and finding the stars, and problems illustrating the whole subject.

The Map may be examined at the Office of the *Nautical Magazine and Naval Journal*, or at the Academy of Professor Brownlow, 184 Cherry-street, New-York. It is just issued, and will soon be found at the principal nautical stores in the United States.

MARINE PAINTING.—We have been shown a painting of the clipper ship *Nightingale*, owned by Sampson & Tappan, of Boston, sailing in R. W. Cameron's Pioneer Australian Line, which is one of the finest examples of art ever produced in this country. The scene is approaching the harbor of New-York with a fresh, fair wind; the effect is life-like, and thrilling in the highest degree. This painting is the property of Mr. R. W. Cameron, and was executed by Mr. W. Marsh, No. 1 Front-street, Brooklyn.

LITHOGRAPH OF CLIPPER SHIP DREADNOUGHT.—We have been presented, by that Prince of Marine Lithographers, N. Currier, No. 152 Nassau-street, with a very elegant and effective picture of the *Dreadnought*, on a moonlight night, off Tuskar light, on her celebrated passage to Liverpool in *twelve days and one half* from New-York. Her lines and full particulars have been given.

BRAZIL AND LA PLATA: the Personal Record of a Cruise, by C. S. Stewart, A. M., Chaplain U. S. Navy, with two illustrations; published by G. P. Putnam & Co., 321 Broadway, New-York. 12mo., $1.25.

This very interesting volume gives a variety of curious and entertaining information, which is to a great extent novel as well as authentic and reliable. It is a work eminently suited for popular reading, and for school libraries. It gives an outline of the cruise of the U. S. frigate Congress, and graphically portrays life on board a man-of-war, and sheds new light upon the position, duties, and influence of a Chaplain in the naval service.

NEW RELATIONS.

THE relations heretofore existing between Messrs. Griffiths & Bates and Dr. A. N. Bell, formerly of the Navy, have, by mutual consent, ceased with this number. Dr. Bell will, however, continue to be a regular contributor.

WE desire to invite our readers to contribute, at any time, their best thoughts, for publication in the NAUTICAL MAGAZINE AND NAVAL JOURNAL; they will always be welcome as correspondents. There are hundreds of them who have ideas valuable to the world, and possess information worth disseminating through these pages. Our editorials and selected articles are ever pressing for room; still we invite correspondence, having determined to enlarge our numbers in case the favors of our friends demand an ampler field. Letters on shipbuilding, navigation, engineering, naval tactics, the introduction of improvements, history of shipbuilding, navigation, and commerce, the biography of eminent mechanics, shipmasters, merchants, etc., will be gladly received. We will always thank our friends to call our attention to the particular subjects which it may be desirable to shed light upon, in order to adapt the MAGAZINE to ends of usefulness in their locality. We cannot engage to publish all letters or papers, but will exercise our judgment, in every case, taking care that our correspondents do not appear to disadvantage in any instance. No matter about a stately style, give us your ideas, and, if worthy, we will furnish the dress. The best thoughts and practical information of any man are worth uttering; let us have them, and you will be proud of their utterance, and thank us for this invitation, while our readers will be laid under obligation for the information communicated.

TO SHIPBUILDERS AND ENGINEERS.—We propose, by the aid of shipbuilders and engineers, to furnish, in each number of the MAGAZINE, short notices of new vessels, whether large or small, and their machinery. For this purpose, it is necessary to send us, about the time of launching, a few particulars, giving the dimensions, tonnage, and trade of the vessel; the dimensions of machinery, masts, spars, cost, etc., together with the name of owner, builder, machinist, and master, and such other particulars as may be requisite to furnish an outline description of the ship, or other vessel, as the case may be. The advantage of this will consist in bringing all parts of the country together, so as to exhibit its shipbuilding operations at one view, and at the same time display the business of those sending us such information. We think every shipbuilder and marine machinist may avail himself of this proposition to his profit, while he would furnish the items for a most interesting portion of the MAGAZINE. Will not some of our spirited readers launch out their notes of progress for the next number—January—and ever after keep up this proposed department? Let all the information be given that you would like to learn from others, and we will shape it to uniform style. Give us the facts, we will dress them up gratuitously, and feel obliged to our correspondents.

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OCEAN STEAMERS FOR MAKING MONEY.

The question of steam for ocean transit, has never yet been fully examined by the commercial mind of the United States, nor yet of England—if we may be allowed to judge from the vessels now employed in the steam marine of the world. It is a most remarkable fact, that the project of every consummated enterprize in the United States, which has had for its object propulsion by steam, has been gotten up by men who have scarce a moiety of either scientific, mechanical, or nautical knowledge, as applied to any kind of vessel, and very much less when applied to steam for ocean navigation. With minds educated in the mysteries of *brokerage* and *merchandize*, it is no marvel that it should require more than one practical lesson on the secrets of science, mechanism and machinery to enlighten them. But, alas! for human nature, the same in the counting-room as elsewhere—the merchant is scarcely less willing than the mechanic to confess his fault, by reversing his action; hence we continue to see lines of ocean steamers, *built upon the non-paying principle*, and American lines of steamers declaring no dividends. But, fortunately for American commerce, that law in mechanics which teaches the studious of every profession that action and re-action are always equal, will be found to have served a two-fold purpose in steam propulsion, not only in reversing the balances of the ledger, but in reversing *the rules of thumb*, by which all American steamers have yet been [illegible] and exchanging them for rules of greater utility. It is a most sig[illegible] fact, that there are distinctive features in ocean transit which have n[illegible] been considered. The passenger and freighting service requi[illegible] or classes of vessels. It is of the utmost consequenc[illegible] and mails should travel at a more rapid rate than fro[illegible] hy not on the sea? and it is not less significant, that [illegible]

not adapted to freighting purposes, and cannot, under any circumstances, be made to declare dividends, when competing with screw propulsion, any more than a lightning train of rail-road cars could, with a freight train attached. The friends of the screw, on the other hand, never have been sufficiently sanguine to enable them to see, in the distance, 20 nautical miles per hour at sea, by a screw steamer; and yet this speed has already been so nearly attained, and under such unfavorable circumstances, as to warrant the assertion that it can, and will yet, be secured in crossing the North Atlantic. It has been demonstrated beyond all question, that *the mongrel model of packet-ships and river steam-boats* is not adapted to the profitable carrying of freight. Why, then, insist upon using it? The fault is not, as is so generally supposed to be, in the size of the vessel. *Our paddle-wheel steamers are already too large, and still too slow, to be profitable* for first-class passenger and mail transit; and if they were adapted, in their sea qualities, to first-class passengers, they are too slow to secure them. It is equally true that their models are not well adapted to the screw, and still less to the side-wheel, for great speed. It is a truism which cannot be disproved, that no vessel is adapted to speed, having three or more decks; two decks are necessary, and any number beyond this is detrimental to speed and sea qualities. Decks add no buoyancy, but their weight, and the consequent increased depth of ship greatly diminishes it, by increasing the draught of water and amount of resistance. But we may be pointed to the Persia— (the owners are building a sister vessel of more liberal breadth.) Very well, we will take the Persia for an example. This vessel cost enough, and has more than material enough, and propulsory power enough, to make half a line of fine vessels, that could beat her time one day at least, with more comfort, convenience and safety; and the several vessels would carry more passengers than she can, at less cost per day. Neither the Persia, or any of the largest steamers, are more comfortable because of their size. The steamer named is any thing but an easy vessel, she rolls heavy and deep. But lest it might be supposed that it is because the Persia is not large enough, we will point to the Great Eastern. There is not a thinking ship-builder or engineer in England or America, who will hazard his reputation by announcing his belief that she will pay dividends, either in money or comforts. Every sea-traveller well knows that it is the rolling motion which makes them sea-sick, and this vessel is admirably adapted for this purpose. But we are told that length is the palladium of success in steamers. We say, No. Length can only be computed relatively, or with respect to breadth. Now, who does not see that by increasing the length of the vessel, we increase the weight *pro-rata*. This is not the case when we increase the breadth; hence we see that when the vessel is lengthened, her draught of water is not reduced so fast as when her breadth is increased; and great draught of water is, under all circumstances, detrimental to speed; height

above water is always significant of increased depth below; this adds resistance by increasing pressure, because philosophy and common sense teach us, that the water which makes room for the passing vessel must come up to the surface, and rise above the water level; and a child who has studied the laws of flotation, or a maid who draws water from a well, knows that it requires more time and labor to draw water from a deep well than a shallow one. Hence we have no hesitation in denouncing, in unmeasured terms, the silly notion that *long, narrow, deep vessels* are the best for mail and passengers, even though our transatlantic friends have been foremost in this folly. A school-boy may see at a glance, that we may keep on increasing the length and depth, and at the same time diminishing the breadth, and before we bring the two sides together, we shall have no buoyancy—the weight of the hull will be so increased as to consume the whole, and the vessel would sink if built of iron. While, on the other hand, if we increase the breadth and reduce the depth with the same length, we lift the vessel, because we have less material to lift, and bring a greater proportionate immersed surface to our assistance to do that service; and as our vessel inclines to greater speed, the time occupied in removing the water from beneath to the surface, is less on shallow than on heavy draught. High speed, we say, is incompatible with heavy draught of water, and more than two decks; whereas, *heavy draught, although in no description of vessel commendable*, is much better adapted to the screw than to the paddle, because the screw, when wholly immersed, is most effective, and the large dip to the paddle-wheel is the greatest detriment. The very best and most profitable arrangement that could now be made for the Collins line of steamers, would be to strip them of their decorative cabins and state-rooms, and arrange iron frames with sackings for emigrant passengers—in which trade English screw vessels have almost secured to themselves the monopoly. One of the Collins steamers would carry 3,500 emigrant passengers, in single cots, and still they could carry the mails. Then we should hear no more of this *non-paying clamor before Congress*; they would then be profitable to the stockholders and to the country. By the adoption of such a measure, the Collins line would be out of the way, and make room for a new line, built upon the principles of science for speed and safety, life-boats in principle and practice, adapted to the wants of the ocean traveller, and such a line as will command the confidence of the world, not from the great size of the vessels, but from the security it would afford from disasters. The Collins line have lost that confidence they once enjoyed in the public mind; and, as far as nation honor is concerned, we might as well be without a line. The emissaries the Cunard line are continually undermining the small amount it now joys, either by pointing to the sluggish pace of the Ericsson—one of the —or to the disastrous loss of two steamers. In addition to this, the picion of its having been built, chiefly or in part, by foreign capital

chilled the ardor of Congress in its behalf. And what has served to consummate its oblivious voyage, is the late decision of its managers to reduce the rate of speed. It will hardly be necessary, under such circumstances, to follow the Collins line, in its rapid transition from a line of first to that of second rate speed; and the sooner the change is made, and the vessels are adapted to emigrant passengers, the better it will be for the owners of the line and for the country at large. We should then have a clear field for a line of steamers, built upon American principles, which need not cost more than one million of dollars, and will pay thirty per cent. on the capital invested, over and above expenses, wear and tear, depreciation and insurance, and furnish security, comfort and less sea-sickness, with greater speed than has ever yet been secured on the Atlantic, either by the Old or New World. This, we say, can be done, and that, too, within a single year from the time we write it. There is need enough, there is money enough, and mechanical talent enough, and, though last not least, we may add, profit enough in it. It may be made *the best paying line of vessels in the world.* But lest there should be some mistake, let us examine this question. The world has, from time to time, learned by dear experience, that great truths are not developed by rapid growth, but that they have had to struggle on for years, and sometimes for centuries, against the influence of prejudice and wealth, as the history of the world has abundantly proved. Since the days of the Syracusan philosopher, the laws of flotation have been understood by the industrious student in natural philosophy, in every land, and yet the commercial world have been engaged in commerce for more than two thousand years, with but little reference to the laws of flotation. During the last quarter of a century, there has been more improvements made in giving an adapted form to vessels, than in any five centuries since the art of sailing was discovered; and yet, like all other improvements, these have only served to show other incongruities in form and feature, so imperfect is ship-building, as practiced. By confining our attention chiefly to steam transit, we are led to contrast the screw and the side-wheel. The former, we say, is not adapted to the highest rate of speed attainable: first, because of its unfavorable position at the posterior extremity of the vessel, and second, because of its insecure locality. When a large proportionate amount of power is applied, no considerable amount of side support is attainable for the security of the shaft, against the power of the engine and that of a cross sea, which is a sufficient reason why they so frequently leak, particularly those built of iron. With a moderate-sized screw, and an equal limit of power, they can furnish all the requirements of freighting vessels, and secure a respectable rate of speed for such purposes. They are completely adapted, internally, or freighting; their engine and boiler may be placed together at the stern, where longitudinal space for stowage is much less valuable; hence, with good management, they are fully able to drive off any side-wheel steamer from

the freighting business, whose hold in its bulkiest and most profitable part is taken up with boilers and engine; and even though the side-wheel vessel has an engine and boiler of no greater bulk than the screw vessel, yet in the screw vessel the engine rests on the sides of the vessel, while in the paddle-wheel vessel it rests upon the bottom. In the screw there is no space under the engine, nor yet above it, lost to the stowage of freight, while in the side-wheel vessel there must of necessity be lost space, both above and below the engine. But again, freight stowed in the bulkiest part of the vessel is most profitable, and is not stowed to any great advantage in the sides of the vessel; on the other hand, passengers are not stowed in bulk, and may be accommodated better in the sides than in the middle of the vessel, both as it regards light, air, and conformity to the shape and sides of the vessel. Hence we say, that side-wheel vessels are equally well adapted to the transit of passengers with those provided with the screw, and may be superior in securing speed. In freighting, a long passage is only a loss in the expenses of the vessel, and in the delay in securing possession of the vessel's earnings at an earlier day; whereas, in passenger vessels, the table expenses must be added. But this is not all; the passenger must, (if going from home,) return, or perhaps make a second voyage, and has intelligence and influence, and can judge whether the vessel is comfortable, stable, and secure against the creaking of bulk-heads, shifting of furniture, and free from that sea-sickening and unspeakable dread to which vessels are too often subject. If the vessel is not what the passenger deems *as a full-grown life-boat*, he may try another line, or advise a friend to. Not so with most kinds of freight—so long as it reaches its place of destination, without the stain of bilge-water and within any reasonable length of time, it is all right; the same line or vessel is eligible to the conveyance of the next order. But passengers of the first class, in price and accommodations, are not so easily managed, and it is well for ocean travellers that many of them do judge for themselves, and give the preference to the best and safest, as well as to the fastest. A sea voyage, at best, is a tedious and monotonous season to most travellers, and the sooner over the better. No man, endowed with an ordinary share of intelligence, will take the ten days' steamer in preference to the one of eight days, the safety provisions being equal in both. Whatever may have been said about the dangers of high speed at sea is but the result of a disordered fancy. Collision with vessels and with icebergs have been numbered among the most prominent dangers attendant on high speed, and yet we find that even a speed of five knots is quite sufficient to crush the bow of an ordinary vessel, when collided with a berg. As to collision with vessels, there need be no occasion for alarm; nothing short of the utmost carelessness could bring two vessels in contact at sea, if properly provided with *lights and look-outs;* and as to icebergs, the atmosphere is always affected so sensibly as to leave no doubt of the necessity of the greatest vigilance.

Where man is incompetent and science fails, Nature has furnished us with provisionary means of protecting life, and thus we are left without excuse to use the means placed within our reach for securing the speediest passage across the ocean. We have yet to record the first disaster upon the ocean, from the vessel sailing or steaming too fast, while we can point to many because of their dull proclivities. *Be sure you are right, and then go ahead*, is as completely adapted to ocean navigation as to other enterprises. It has become almost as common as a household word, that it is vastly more expensive to run ocean steamers at high than at low speed. We say, and have no fear of successful contradiction, that wherever this is the case, *it is an evidence that the vessel, the engine, and the boilers, are not adapted to each other, and to this rule we make no exception.* That it costs more to maintain the highest rate of speed to which a vessel may be driven, than at her adapted speed, no one will deny; but that the *adapted speed* of an ocean steamer may be twenty miles an hour is payingly possible, and at no greater cost, than ten miles are obtained from an ill-adapted model, is also equally demonstrable. The great embodiment of utility in ocean passenger transit has never yet been brought into operation in the same vessel. The mind which conceives, and the hand that executes, must be found in the same person, in order to secure success. There was an effort made, several years ago, to build a fast steamer, but before the hull was completed, or the engine commenced, a reverse of fortune in her projector brought her into the hands of one who had neither the capacity to comprehend her design, the stability of purpose to execute it, the means to finish it in conformity with any plan, or adapt her to any specific purpose. This individual amused himself in accommodating the fancy of those who wanted a job in tearing down and building up different parts of the hull, until the limited stock of mind and means became exhausted, when the vessel passed into the hands of a Spanish company, with nothing of the design but the *bottom* of the ship, burdened beyond all precedent with detrimental encumbrances, and now is, notwithstanding, the fastest vessel afloat, and runs successfully between Havana and one of the ports of Spain, a distance of about 4,000 miles, with scarce more than a moiety of her originally-designed power; and yet this vessel's final success, in point of speed, was not consequent upon her size, for she was but 1200 tons, and quite large enough for passenger transit. Nearly one hundred first-class passengers could have been carried in that vessel across the Atlantic within a week, and that, too, at a cost of less than two hundred thousand dollars for the vessel, and with a consumption of less than 850 tons of coal. With such a line of vessels, what need would there be of asking Congress for a mail contract? Would not such vessels carry the letters and newspapers, despite of any contract with other parties? And who will say that such vessel will not pay, or that the passage may not be made within the week of seven days? Yet, when we designed the vessel referred

to, and demonstrated her ability to make the run across the Atlantic, from New-York to Milford Haven, in seven days, we were regarded as visionary. But now that three years have passed away, there are some men who will believe that it can be done, because they see England has profited by our example and moves in that direction, and is improving the speed of the Cunard line.

With regard to freight, there is but limited space for it in a fast steamer. The space is of more value for other purposes. All beyond the space required for the accommodation of passengers, officers, crew and coal, is room procured at a cost vastly more expensive than can be compensated by the highest rates. With regard to emigrant passengers, the same might be said. The Ericsson would pay much better if prepared for the accommodation of emigrant passengers, of which she is competent to carry nearly 2,000, and still conform to the provisions of the law; and this would be far more profitable than common freighting and passengers. There need be no mistaking the provisions of the laws of adaptation in side-wheel steamers for mails and first-class passengers, the screw for freighting manufactured goods and emigrants, and the sailing ships for raw products and dead-weight commodities. For all new channels of commerce, the screw steamer or the clipper propeller is well adapted to foster and build up a trade where the elements only exist; whereas, the side-wheel steamer would cause it to die out, because of the great amount of space occupied by the engine, boilers and coal, and the small amount of capacity left for freight, even in those of the largest size. The number of decks which is necessary for passengers is the greatest drawback on freight, particularly in the side-wheel vessel, because freight can neither be stowed below nor yet above the engine, while in the screw vessel there is no capacity below the engine, and the cabins may be above it, so that there is no space wasted, while the bulkiest part of the vessel is reserved for cargo. We have advocated a fast line of steamers for passengers, whether it be from New-York or Boston; and now that we are burdened with more large steamers than can be found profitable to their present owners, or any body else, there is little prospect of a fast line from New-York. Our Boston friends, therefore, have a fine chance to get up a line that will do honor to themselves and to the country, and retrieve our laurels which have been wrung from us so reluctantly by the Cu[illegible]
Then let us have a fast line of steamers from Boston, New-[illegible]
phia, Baltimore, or Norfolk. Let the line be forthcom[illegible]
and if no one else will undertake to furnish the mod[illegible]
speed, and the cost of vessel, with the accommodati[illegible]
do it ourselves; only let us have a fast line, a paying [illegible]
independent of Government patronage, and carry [illegible]
for a contract—a line that can go to sea without [illegible]
Cunard line does;) a line that will always go full[illegible]

its being the fastest, the safest, the easiest in its motion, with the least sea-sickness on board, and the best paying line of steamers in the world; a line of steamers which shall bear the same relation to ocean travel that the *lightning train does to rail-road travel.* On rail-roads, there is the lightning train for mails and passengers, the express train for express freight and passengers, and the freight train for freight, and sometimes passengers. So should ocean transit be arranged; the lightning line for mails, passengers and express packages; the clipper propeller for long freighting voyages; the screw steamer for emigrant transit, and the sailing ships for heavy freight. We now lack the lightning line for passengers crossing the Atlantic to England, France and Germany, and the clipper propeller line for the ports on the Mediterranean. We are glad to learn that Messrs. Van Zandt & Co. have the latter matter in progress. Who will take hold of the former, and give us the line of steamers so long needed, so much desired, and secure the advantages of extended trade and large profits, without successful competition, all at an expenditure of a sum not exceeding one million of dollars for the line, ready for coals, passengers, and the mails?

THE FRICTION AND RIGIDITY OF CORDAGE.[1]

WHAT in most other fabrications of art is found detrimental to usefulness, in cordage appears to add value for practical purposes. Without the quality of friction, ropes would be of little service on ship-board, or in any of the various uses subserved by their peculiar adaptation. The facility with which "turns" may be taken, "hitches" made, and "knots" tied, depends upon the great amount of friction possessed by the surface of cordage. If we take running rigging for example, every nautical man is aware that were it not for friction the ropes would slip through the seaman's hands and be altogether unqualified for the purposes used.

In Mosely's Mechanics of Engineering, the theory of friction of cords is plainly stated and illustrated, and we propose to furnish a synopsis of it, with a few practical remarks. It is remarkable that in pulling a rope over a fixed cylindrical surface, it matters not, so far as the friction of the rope is concerned, whether it passes over a large pulley or drum, or a small one, provided the angle subtended by the arc which it embraces is the same, and the materials of the pulley and rope the same. In the case of a cord passing around a surface, the force necessary to cause it to slip is the same, whether it be square, or circular, or elliptical. Each additional coil around a surface increases the friction nearly eight times; an additional half coil nearly three times. The enormous increase of friction which results from additional turns upon a capsan or windlass, enabling one person to hold the resistance

of many tons, may now be readily understood. Wet ropes have but one-third the friction of dry ones, and hempen less than Manilla cordage, being of a harder nature and saturated with tar.

The explanation of the reason why a knot, connecting the two extremities of a cord, effectually resists the action of any force tending to separate them, may be given thus: If a cord be wound round a cylinder of oak, and its extremities be acted on by two forces, P and R, the former will not overcome the latter unless it be equal to about eight times that force. Now, if the end to which R is supposed to be attached, be brought underneath the other end, (or part,) so as to be pressed by it against the surface of the cylinder, then, provided the friction produced by this pressure be not less than one-eighth of P, the cord will not move, even although the force, R, ceased to act; and if both extremities of the cord or rope be thus made to pass between the coil and the cylinder, a still less *pressure* upon each will be requisite. Now, by diminishing the radius of the cylinder, this pressure can be increased to any extent, we may therefore so far diminish the radius of a cylinder as that no force, however great, shall be able to pull away a rope coiled upon it, even although one end were loose and acted on by no force. In the case of a knot, the cord is coiled around portions of itself, instead of a cylinder, and any force applied to its extremities only increases the pressure by drawing the parts tighter together.

The rigidity is that quality of cordage which requires a force to deflect it from a rectilinear direction, so as to adapt it to the form of any curved surface over which it may be made to pass. It is a property of prejudicial influence, as it causes a waste of force in all the various applications of cordage to useful purposes. The rigidity of the cord exerts its influence to increase resistance only at that point where the cord winds upon the pulley; at the point where it leaves the pulley its elasticity favors rather, and does not perceptibly affect the conditions of the equilibrium.

In new cords the rigidity is proportional to the square of the circumference; in half-worn ropes it is proportional to the square root of the cube of the circumference. In tarred rope the rigidity is found to be proportional to the number of strands. The utility of adapting the diameter of sheaves to the size of cordage used for tackles is quite clear. If for three inch rope the diameter of sheave is required to be five inches, a sheave should be of four times the diameter for a rope of double the circumference or size. These proportions are not observed in blockmaking, and hence a greater than a proportional amount of resistance from rigidity is experienced in overhauling large purchase tackles.

An oakum manufactory is being established at the Brooklyn Navy Y of sufficient capacity to furnish a superior article for the use of th Navy of the United States. It will be complete in about three mo

REVISION OF THE REVENUE LAWS.

WITHIN the orbit of American legislation no royal field may be found for the aspiring statesman; but for the patriot, the sage, and the practical business mind, the Congress of the United States affords an arena for usefulness such as never before existed in the history of mankind. Yet, what do we see at Washington, where too many of our legislators mistake their vocation and consume the sessions in turbulent debate, instead of acting upon the business matters of the country. The immense interests of the domestic and foreign commerce of these States, which the patriotic statesman should foster with the most sedulous care, as he prizes the progress and destiny of the American Union, are almost unthought of by politicians. The consequence is, that European nations, by a stricter attention to business, are laying the foundation for empire broader and deeper, than any mere inherent force of American character, so generally relied upon by our people, will be able always to contend with successfully for the first place in history.

Our Navigation and Revenue Laws are unworthy of modern statesmanship; and, most strange to say, very few of our legislators or commercial men are aware of the crudity of our system, or alive to its reform. For ourselves, we are ashamed of many imperfections in our maritime code, which in the present age are excusable only in countries like JAPAN. Take for instance the Tonnage Laws, on which we have written page upon page for the past ten years. How dilatory do we appear to the gaze of the world as the masters of shipbuilding and modelling, possessing a merchant marine the first on the globe, and yet *without a rule to determine its tonnage!* We may make the model and build the ship, but here the hand of the American architect is palsied; he must leave his native soil, sail over the Atlantic, and beg a British surveyor to admeasure his ship. To call our tonnage rules by this name is a barbarous perversion of modern language. Our Navigation and Collection Laws have become "*old shoes*, and clouted on our feet."

In January, 1853, the Senate passed a resolution instructing the Hon. Secretary of the Treasury, JAMES GUTHRIE, to report a draft of a general revenue law, designed to supercede all existing laws on the subject, and to embrace all needful provisions for regulating the foreign and domestic commerce of the United States. With commendable despatch the Secretary, with the assistance of his clerks, prepared a bill, which was reported July 11th, 1854. The whole legislation upon the subject of the bill, embracing fifteen distinct chapters, was examined from the commencement to that time. The first object was to obtain a clear view of all the acts of Congress upon the subject; the second, what part of those enactments had been directly repealed; the third, what part had been repealed by conflicting enactments, so as to ascertain what was still in force; the fourth, what part of the remaining enactments were inapplicable to the present condition of our

revenue and navigation laws, and required modifications; the fifth, what additions were necessary to make the enactments a consistent whole, capable of practicable and beneficial application by the official corps, and of ready comprehension by commercial men.

Such was the design of the laborious endeavors of the Hon. Secretary in drafting his Revenue Bill. We have carefully examined it, and regret the necessity of withholding our approbation of its provisions as it now stands before Congress. It is not altogether the fault of the Secretary that the Bill presents some very unpopular features. As the chief revenue officer of the Government, he has prepared it with an eye single to preventing frauds on the Customs; for this end it is a strong Bill. But the Government is only one party in the matter; a more comprehensive statesmanship would have foreseen the propriety of representing *all* the parties interested in such a thorough revision of customs and commercial law. It is not the work of a single mind, nor any dozen of minds connected with the Custom Houses of the country, to prepare a just and equal code of statutes for the regulation of the numerous subjects involved in maritime transactions. The practical knowledge at command of the shipbuilder, master, and owner, is indispensable to the proper discharge of such a task. A wise and equitable revision of our laws upon the numerous subjects in question, would be best effected by the labors of a Commission, composed of merchants, shipowners, shipmasters, marine architects, and revenue officers. In such a Commission all parties would communicate their practical knowledge, and a code of laws worthy of the age might be thus originated. But this is the legitimate work of legislators. Why should the subject be taken out of the hands of Congress? Yet better to do the work ourselves, than permit it to go undone or be spoiled.

Of the Hon. Secretary's Bill before us, our remarks will be few but pointed. The letter of DAVID OGDEN, ESQ., one of the most vigilant mercantile minds of New-York, to the Secretary of the Treasury, discusses it in detail. With many of its provisions we are satisfied; but, as a whole, deem its imperfections too many to constitute it a good one, or one that should pass Congress in its present shape.

The principal changes from the existing laws are contemplated in the registry and tonnage of vessels, in abolishing the provision that two-thirds of the crew should be American sailors, and in providing that the tonnage of vessels should be the actual carrying tonnage, and in abolishing all Custom House fees, excepting those for recording sales, transfers and mortgages of vessels, and the twenty per cent. on seaman's wages, as an hospital fund for sick and disabled seamen, and substituting therefor an hospital tonnage duty on the vessel.

The Bill abounds with *penalties*. The slightest delinquency in observing the revenue laws, involves the loss of the ship, without regard to her magnitude, whether of five or five thousand tons. The fines and penalties are

allowed to the principal officers of the Customs, as before, in addition to their salaries, as a *stimulus* to the vigilant discharge of the heavy and onerous duties committed to them, and to secure a due and proper enforcement of the revenue laws. This is a mistaken policy, and has ever been prolific of corruption and abuses in every country wherever practiced. Merchants have now to pay for the despatch of business around the warehouses; and to ask them to throw in a ship a-piece, all round, once a year, perhaps, is altogether too exacting. Besides, if shipowners are to submit to all the provisions of the proposed law, there will be little left for revenue officers to do. The unfortunate owner is made a guarantor that no smuggling shall be done either by accident or design.

For the Government to deal with the shipowners of the United States as with a band of smugglers, is not only unjust but insulting and oppressive. Our ships are too large and costly for "forfeitures," spoils and prizes; they are at least *ten times* as large as when this barbarous principle was first applied in Europe ages ago. Let it remain where it received its royal origin. It is enough to *seize the goods*; they always belong to the guilty party.

With respect to admeasuring vessels for tonnage registry, the Secretary is so far at sea that he proposes no rules on the subject, but provides that the actual carrying tonnage shall be ascertained by certain undefined rules, to be prescribed by this officer from time to time as may be required. This will not do. We should have no difficulty in prescribing rules of admeasurement which would secure the object in view, and they should be permanent.

In the first place, enact the new English tonnage law, based on internal space, and thus secure the advantage of an *international* law to both nations; and secondly, go further, and complete the system by adopting an *external* measurement of displacement within the limits of the keel and upper deck. With the internal cubature and the external displacement recorded, the wants of commerce and science would be fully met in the admeasurement of shipping, and anything short of this would be but partial legislation.

Chapter three, section 17, provides that owners of *yachts* shall at all times permit the naval architects in the employ of the United States, to examine and copy the model of said yachts. We demur to this, unless the owner consents. By what right is a private citizen required to *give away* his best thoughts and most sacred artistic productions to "naval architects"? If a *marine* architect can excel naval architects, it is our opinion the former is entitled to preference by the Government, and should be employed and paid for his skill if it be desirable to profit by it in the navy, or make an appropriation and purchase the model sought for. We think naval architects would scorn to make such extraordinary demands upon their brother architects; on their behalf we say, strike out this clause.

Suing a run-away sailor is one of the hopeful remedies [illegible] chapter regulating seamen. The following is a copy of Mr. [illegible] to the Secretary of the Treasury:

NEW-YORK, *May 26th*, 1856.

Hon. JAMES GUTHRIE, *Secretary of the Treasury*—

SIR:—In conformity to my arrangement with you, I have to suggest for your consideration the following points wherein I think your bill for altering the Revenue Law is wrong.

CHAP. 3. SEC. 6. This section I consider exceedingly objectionable, liable to great abuse, and renders the owning of vessels very hazardous. The registering of vessels ought to be by some fixed plan, and not left to the decision of the Secretary of the Treasury to decide according to the different "shapes, build, and dimensions." What can the Secretary of the Treasury in Washington know about the various vessels that are building all over the United States; and here let me say in frankness, that throughout the whole bill there is too much left "as the Secretary of the Treasury may decide from time to time." We do not always get a Secretary that understands the subject, and every new Secretary would issue new rules, and we should be afloat with every change. Stability is what we want.

SEC. 11. 4. After thereof, insert "Ships' Husband." Would it not be the saving of much trouble to let the managing owner swear, that he with the other owners are citizens of the United States, and own the proportion set forth opposite their respective names? This simple plan would accomplish all that is wanted; and here I would suggest the abolishing of oaths—swearing to every thing. In English Custom Houses it is done away with entirely, and surely we can get along without such a form; they have tried it, and find it to succeed.

CHAP. 4. Regulating Seamen. I would suggest that when vessels are in port where American seamen cannot be obtained, and the master presents the Consuls' certificate of such port, that then the tonnage dues shall not be paid.

CHAP. 5. SEC. 8. 60. The words "or the tools of trade" ought to be omitted. It is impossible to furnish such a list, and no good can arise from such list—no duty being charged on such—an useless form.

SEC. 9. This section ought to be stricken out or changed materially—errors will happen, and when they do there should be some remedy shorter than the one proposed. Collectors, naval officers, and surveyors, when forfeitures are concerned, are not always the best judges, and to go through a form of trial would be worse than paying for the cost of goods that never were put on board a vessel. I would have much rather inserted "as the Secretary of the Treasury might decide," because he would be more free from bias.

SEC. 20. This section is again very hard upon the owner of any vessel—putting a penalty of $500 on the vessel when the owner is entirely innocent, and will lead to suits without end. During the time I have been a shipowner some most singular errors have occurred; in one case we had a number of cases of goods belonging to a house in Philadelphia; a vessel for that port loaded next to mine, and we got some 5 or 6 cases belonging to that vessel on board ours—now having no Bills Lading we could not put them on her manifest—the Philadelphia vessel having given a Bill Lading for them would put them on her manifest—now under this section both would be subject to a penalty of $500. This should be left to the Collector, but without penalty.

CHAP. 6. SEC. 15. Put in this (the forfeiture of the goods, and the punishment of the offender), but strike out "and when the value thereof" to the end of the section. It would be a wrong to seize the vessel of an innocent owner, and punish him in that way for thing he is entirely innocent about, and of which he knew nothing.

SEC. 23, page 233. Strike out "and the tools of trade, &c.," as useless.

CHAP. 8. SEC. 5. In case of Landing Certificates, to do away with the requi signatures of the master and mate, making the signature of the consignee abroad is required, for it frequently happens that vessels lay some distance from the (

office, and it is difficult to get the master and mate before the Consul. The consignee of the goods having no control over them; sometimes vessels lay at anchor far below the nominal port they are loading at, and generally speaking, the mate cannot leave the vessel without very great inconvenience; in fact, they often refuse to do so. Some foreign Consuls in New-York live at least three miles from the business part of the city, in some cheap place, and have their offices in their dwellings, and so it is with some of our American Consuls abroad. It is great hardship to compel the master and mate to swear to these Landing Certificates, and no good attends it. A section should be introduced, giving the master the right to sell sufficient goods to pay freight and charges on any goods sent to public store. All nations allow the master to secure his lien on goods not claimed, or taken possession of by the government.

Chap. 9. Sec. 4. There ought to be inserted "except when by some mortality, or the "impossibility in distant ports, such officers cannot be obtained, and when any vessel has "lost her officers by desertion and they cannot be replaced," would seem to be just.

Chap. 10. Sec. 8. Whenever any officer seizes goods or vessels unlawfully he should be punished, otherwise this power of probable cause can be carried to great excess. I have had a vessel seized through *mistake*, and now hold the Surveyor's letter to that effect, still it cost me $150 to get her cleared from the District Attorney; and such cases, I am persuaded, frequently occur.

Chap. 12. Sec. 1. The levying of five cents per ton on the issuing a new Register, or the renewal of the Register, and three times a year from any foreign port or place, seems very exorbitant, and coasting vessels only to pay once. This is taxing the shipping very severely, and very unnecessarily—raising money not required, only to be squandered by those having charge of hospitals. The more is raised the more they will spend. I should think $800,000 to $1,000,000 would be raised under this section, and why, I would ask, should the shipowners be taxed for that? That is of no use to him; put the tax on the party to be benefited, for in some ports *Jack* pays both State and U. S. Hospital money; or else prevent by statute any State from charging Hospital money as being a tax on commerce, which no State has a right to make. Under the present law a ship of 1400 tons, for a voyage from New-York to Liverpool, pays about $17 Hospital money, or about $51 per year; under this new section three times a year would be $210, out of all reason—it never can be necessary to make such an increase, except to squander the money.

Sec. 4. We ought to have an apprentice law to enable vessels to derive any benefit under this section, and under the age of sixteen should read *eighteen*. Boys under sixteen are of no use on board of ships, and the scale of three for every 400 tons would prevent any vessel from enjoying any benefit under this section. Vessels of 1600 tons would be required to carry 12 boys. There must be surely some misprint here—one for every 400 tons and under, and then one for every additional 400 tons.

Chap. 14. Sec. 15. Should be entirely stricken out; it is wrong and very antiquated; it seems almost ridiculous to prevent the importation of sugar, refined, lump, loaf or crushed in packages less than 600 lbs. I should strongly recommend this section being knocked out entirely and *in toto*.

The above are some of the objections to the new Bill. I would further say, that vessels arriving from sea should be allowed to commence discharging in three days after arrival; now they have to remain *seven* days which is entirely too long, and embarrasses the shipping interest much—15 days is only allowed to discharge—plenty of time when the law of 1799 was passed, but at this time vessels are *six* times larger than they were at that time. 25 days ought to be allowed for vessels of 1400 tons and upwards; practical knowledge is required to understand this. For the present I will close, and will thank you for an early reply to my views.

Yours respectfully,

David Ogden.

LAKE SHIP-MASTER REGISTRY.

THAT the underwriter is of necessity deeply interested in the qualifications of ship-masters, scarcely admits of a doubt; and that of right he may demand credentials of capacity, and take measures to improve the efficiency of officers in charge of shipping, is no less clear. The ship-master is laid under a two-fold responsibility the moment his ship is insured,—a private responsibility to the owner, who looks to him to sail the ship profitably and creditably, and a responsibility to the underwriter, that he will faithfully navigate the vessel, and provide against loss either to ship or cargo. Yet how many officers are there who consult their honor and justice so far as to acquit themselves manfully in the discharge of their duties toward the underwriter on all occasions? Too often it occurs, that officers, undeserving the charge of vessels, regard the insurance as a make-weight, to partially compensate the owner for the results of their own heedlessness and inattention to duties. Instances are not uncommon where the first officer supplies the places of both mate and master, while a favorite nephew or cousin has the nominal command, and receives the wages. It is all right, thinks the owner; there is a good *mate* on board, and the vessel is *insured*. The mate takes care of the ship when his watch is on deck; but how often has it happened, when his watch was below, that he turned out to find the vessel ashore, in collision, or in wreck! One of the most frequent abuses of responsibility, is to leave a vessel after loading, and join her at an intermediate port in the voyage. Another is, for capable masters to stop ashore, while the first officer performs a voyage.

The very best natural qualifications are required for the stock in trade of the successful ship-master; but mariners possessing such, are quite as likely to enter into other pursuits, as to sail, after the love of the sea has been exchanged for superior comforts and more substantial sentimentalities on shore. Many of our smartest mariners give up the sea at an early age. In their places, owners introduce inexperienced and often naturally incompetent men. The worthy seaman, whose modesty should be his best recommendation for character and talent, is passed over, to select from the noisy crowd the smartest talker, but poorest business man; the best boaster in a saloon, but the most unnerved and irresolute in a gale of wind. Should some unknown Jack save the ship in a perilous time, one of these *lingual* skippers would lose no time in turning his vocation to account, in m the event a stepping-stone to preferment—perhaps on a steamer's Poor Jack elevates many a ship-master, to be rewarded by lower, poorer fare. One circumstance has always surprised us: an i officer loses his ship, and perhaps the greater portion of crew; he is said to have met with a cruel misfortune, and p private sympathy intercede in behalf of his fortunes, and st

found superintending a new vessel, more costly than the old one, and he is thus advanced at every hazard.

There is one class of vessels in which the best and the poorest seamen may be found in charge. This is composed of vessels with which the underwriter and shipper, as well as the confiding passenger, have no business. These are old vessels, tottering to the arms of the deep; they grow more rotten and shaky with every sea they mount; the animus of their constitutions leaks out day by day; the fastenings slip and hold, and the last wrench is ever in expectancy; still, season after season, they are served with a little pitch and oakum, a few brushes of paint, and the well-wishes of the owner, and the ship is ready for a freight. Some venturesome seaman, or last year's mate, essays the charge; the old box becomes his stage for enterprise, industry, and hard-won distinction as a ship-master. Composed of materials for a good master, he has found no other opportunity for rising in usefulness and attaining a position among his fellow-men. He makes the old hulk *pay*, and this ensures his advance to a better vessel at the commencement of another season. His hardy enterprise has maintained the character of the rotten shell. Perhaps the owner sells out, and the lucky master takes the new craft. Next year, some reckless fellow plays for the same stake, wins or loses, but most likely works his way on board of a square-rig at last. The ambition for distinction, the love of gain by high wages in responsible commands, and the prospect of high social condition, all combine to lead ship-masters, as similar impulses do other men, to strive for advancement; and the fact is patent to the man of observation, that the smartest engineer of his own fortunes comes out foremost in the race.

The proper degree of merit to be awarded for purely professional accomplishments, must be decided by some more comprehensive index than the one alluded to. With a wise insight into the *rationale* of sailing vessels on the Lakes, the Board of Lake Underwriters has prepared a Ship-Master's Registry, of the nature following, to wit: The Insurance Inspector of each District is charged with the filling out and return to the Secretary of the Association, of blank sheets, giving the name, age, residence and nativity of mariners having had charge, or been promoted to the command of vessels, together with the fact of living married or single, when and where they commenced sailing, the number of years sailed, in the capacity of cook or boy, of ordinary seaman, of seaman, of mate, or of master, naming the vessels of which they have been masters, the number of times they have been wrecked when in command, the number of vessels they may have lost, and the cause of loss. The reputation is given, and habits are described, and the Inspector's opinion is furnished respecting their standing as men, and their merit as ship-masters. Copies of these reports, similar to the Reports of Survey held on shipping, are sent to each company composing

the Association of Lake Underwriters, but to none other. These Reports, moreover, are examined carefully by the Executive Committee, and the names of such persons as, in their judgment, deserve to be placed on record as approved masters, men of integrity, prudent to avoid danger, prompt and energetic when in peril, and when disaster has happened, faithful to all the interests entrusted to their charge, are selected, and placed on a list, which is furnished by the Secretary to each member of the Association. The "Approved Masters" are notified of their preferment to the "Approved List," by a note couched in the following polite terms:

ASSOCIATION OF LAKE UNDERWRITERS.

Buffalo,——————185 .

To Captain——————

DEAR SIR:—You will please take notice, that the "Association of Lake Underwriters" have placed your name upon the list of "APPROVED MASTERS," where it will remain so long as you continue to sustain the character now accorded you.

E. P. DORR, J. N. GARDNER, R. C. BRISTOL, *Executive Committee.*

——————*Secretary.*

To make this action effective, the Reports must be impartial, and the decisions of the Executive Committee unbiased.

HARBORS AND COMMERCE OF PORTS ON LAKE MICHIGAN.

BY LIEUT. COLONEL GRAHAM, TOPOGRAPHICAL ENGINEERS.

WAUKEGAN BREAKWATER.

THE town of Waukegan, Ill., is located upon the shore of the Lake, and has no natural harbor for refuge to shipping. The government has undertaken the construction of a breakwater, abreast of the town, which is designed to be 1,380 feet long, placed in a depth of twenty feet of water, and distant 425 feet from the shore, giving ample room for the anchorage of vessels behind it. This breakwater is being built by sinking crib-work 25 feet wide at base, and 25 feet from bottom to top. Owing to the unsheltered nature of the coast, great difficulties have been experienced in building and placing the crib-work. One crib has been sunk, and has maintained its position.

Col. Graham remarks in his report as follows: "The importance of the Waukegan breakwater is not limited to the accommodation required for the trade of this particular locality. It extends to that of the general commerce of our great western lakes, owing to the great facility it would afford to all vessels for reaching a safe anchorage behind it during the vi of the northerly, north-westerly, or south-easterly gales which are quent upon this lake.

"In illustration of this point, I quote from my former report the following remarks, viz:

"'The rivers which enter this lake from the west, nearly all do so upon a course nearly east, or somewhat south of east. They are all so narrow at their mouths, that vessels attempting to enter them from the northward, in a strong northerly gale, are frequently unable to luff quick enough for doubling the windward pier, and, for want of sufficient sea-room between the piers, are often carried entirely to leeward of the harbor entrance, and stranded on the lake shore. Under the same circumstances, these vessels would experience no difficulty in reaching a safe anchorage behind such a breakwater as this. The ample room between it and the shore would enable them by an easy course, to reach the anchorage affording the desired shelter. Equal facilities are afforded by the breakwaters, to vessels seeking shelter under a gale from the southward. A single glance at the map will demonstrate this.'"

To the above remarks, I feel called upon to add, from a close observation since I took my station here, upon the general effect of severe gales upon the shipping, that sufficient protection cannot, under these circumstances, be secured to it without the construction of several such breakwaters at different points on the coast of Lake Michigan. These points should be selected, not so much with regard to the favoring of particular localities, as to affording harbors of refuge of easiest access to shipping generally. If once constructed, their usefulness would soon be demonstrated by the security they would afford to many a vessel which, after having failed in a storm to luff-to, quick enough to make a harbor within the narrow-mouthed rivers on the coast, and being driven to leeward of them, would, by a leading wind, or upon an easy course, afforded by the same wind, be enabled to come to a safe anchorage behind these works. The accommodation they would afford, would not be confined to the commerce of Lake Michigan alone, but would extend in an equal degree to that of all the great western lakes, with which there is inter-communication during the season of navigation.

Waukegan is a port of delivery for foreign importations, and belongs to the district of Chicago; a deputy collector is stationed here.

There is a light-house here, situated within the town, on a commanding bluff, at the intersection of Broad and Lake streets.

The enrolled tonnage belonging to this port on the 31st of December, 1855, consisted of 3 schooners, measuring $401\frac{4}{5}$ tons.

The number of arrivals and departures of vessels during the navigable season, say from March 1 to December 31, 1855, was 1,840.

The average number during that period was, per day, 6.

The amount of tonnage of vessels arriving and departing, during the same period, was 1,119,116 tons.

The average daily tonnage arriving and departing during that period, was 3,657 tons.

No revenue from foreign importations was collected at this port during the year 1855.

The amount and value of the commerce of this place, during the year 1855, is shown to have been as follows, viz:

IMPORTS.

1. By lake shipments,	$528,319 87	
2. By railroad,	220,935 32	
Total value of imports at Waukegan, Illinois, in the year 1855,		749,255 19

EXPORTS.

1. By lake shipments,	$491,408 00	
2. By railroad,	179,922 69	
Total value of exports from Waukegan, Illinois, in the year 1855,		671,330 69
Aggregate value of the commerce of the port of Waukegan, Illinois, in the year 1855,		1,420,585 88

That is to say, one million four hundred and twenty thousand five hundred and eighty-five dollars and eighty-eight cents.

A branch railroad is determined on from Waukegan, to connect with the Fox river Valley and Wisconsin Central Railroad.

This improvement would greatly increase the commerce of Waukegan, for a large region of very fertile land lies immediately west of this town, and the facilities for transportation are only needed to increase cultivation, and thus augment the great source of commerce here.

KENOSHA HARBOR, WISCONSIN.

The chief work done at this harbor during the year 1855, has been the deepening of the channel between the piers and on the bar, by dredging; and the making of an accurate triangulation and survey of the harbor, for the purpose of developing the further improvements that are practicable, and which seem necessary for the benefit of the general lake commerce.

Notwithstanding the important, but temporary amelioration of the harbor, produced by the dredging, the entrance over the bar is not in so good a condition now (December, 1855,) as it was in July, 1854. It h ... es us to ascertain under what controlling law it is, that the eff... ve amount of dredging has been destroyed so soon; and to ... r progress of the improvement, to adopt some means to

The increased deposit upon the bar at the entrance ... doubt, in my mind, been caused in a great measure ... tion and force of the northeasterly and easterly win... during the year 1855. The frequent and violent g... mentioned more in detail in the part of this rep... Waukegan breakwater, will serve to illustrate this.

The direction of the current from the northea... the silt and deposits it where the lake waves me... the mouth of the harbor, is due to the relative...

of which it is the resultant; and these are, first, the littoral or shore current habitually prevailing from the northward and running parallel with the lake shore; and, second, the occasional sea current, or direction of the waves from the broad expanse of the lake, whose direction and force are due to that of the winds. As the latter force is augmented proportionately more than the first, the more will the resultant, or axis of deposit for the silt, tend towards the mouth of the harbor, or to the direction corresponding to that of the piers. The first remedy, then, which suggests itself, is to increase the first mentioned force, and thus change the direction of the resultant more towards the south.

We know, from observation, that the strength of this littoral current increases with the increased depth of water, or in proportion to the distance, measured perpendicularly, from the shore, lakeward. This first condition will then be obtained by increasing the length of the piers, as has already been recommended by the board of engineers, and approved, but which was not done, because the balance of appropriations on hand was inadequate to the work required.

But there is still another cause operating at this harbor continually to augment the bar at its entrance, which it will be easy to remove, and which should be the first step towards the improvement; and this is the length, or projection lakeward, which has been given to the three bridge wharfs, or pile wharfs, immediately to leeward of the harbor piers. These are Elkin's, Hale & Ayer's, and Durkee & Truesdell's wharfs. They run out from 780 to 830 feet from the shore lakeward, or 240 to 300 feet further into the lake than the United States south pier of the harbor projects. This is done in order that they may reach a sufficient depth of water for vessels of the largest class to lay afloat along side of them when loaded. But they are a serious nuisance to the harbor, because, intercepting the silt carried past the government piers, its deposit begins along the line of these wharfs, a certain distance out from shore, and in accumulating extends more and more towards the harbor entrance, until very soon a bar forms which obstructs that entrance.

Unless some legal check can be given to this building out of private wharfs to an indefinite extent into the lake, it must at last destroy the harbor entrance altogether, because the further these sand bars (which is of their creation) extend out from the shore, the further will the wharfs be extended, in order to reach deep water. They should be at once curtailed so as not to exceed the limits of three hundred and sixty feet (360 feet,) measured from the lake shore, which is ample for the accommodation of vessels in loading and unloading, and the necessary depth of water for them to lay afloat should be obtained and preserved by dredging. I would recommend that this condition be insisted on before any steps are taken to extend the present harbor piers, because, otherwise, there will be kept up a useless and absurd race between the private wharfs and these costly government works, in order to determine which shall project furthest into the lake, and all at the expense of and detriment to the general commercial interests.

The shoaling of the water between the harbor piers, which has taken place since the finishing of the dredging in August last, is due to a cause very different from either of those above mentioned. It has not been owing to silt washed in through the mouth of the harbor and deposited in the channel, because this would have formed the shoal at the first point of [illegible] sistance to the waves, holding the silt in suspension, that is to say, [illegible]

east of a line connecting the extremities of the piers. But we find, by reference to the map, that the eastern extremity of this shoal (as bounded by the curve of nine feet water) is full 170 feet within or west of such a line; and that it extends only 190 feet along the inner margin of the north pier, but 560 feet along that of the south pier. The question arises: What must be the direction of the force that would produce such a phase? It is evident, on a careful examination of the premises, that it must be perpendicular, or nearly so, to that direction, and that the sand forming this shoal has been blown, by the violent gales of wind which have occurred, from the beach into the channel. The greater deposit of it near the south pier than that near the north pier, is due to the shelving effect of the latter pier.

I have often witnessed (and so have my predecessors in charge of these lake improvements) during strong winds from the northward, clouds of sand carried in the air and deposited in showers at a certain distance to leeward.

To protect the channel between the piers from this deposit, board fences, and sometimes fences of brushwood, have been erected to a height of four or five feet along the north margin of the north pier. This has been found to mitigate the evil, but not to cure it entirely, for the reason that these fences were not made of sufficient height. It is difficult to sustain a board or brush fence more than four or five feet high, made in the common way, against the strong northerly winds which often blow here. It is, however, essential that a stable barrier at least 14 feet high, should be erected along the exterior face of the north pier, in order to ward off these showers of sand blown from the beach by the north winds. Grass should also be sown on a thin layer of soil spread over the sand beach, which would soon take root and spring up and form a permanent and natural protection.

I would recommend that the barriers to be erected, should consist of a line of *chevaux de frise*, 600 feet long, extending from the junction of the lake shore with the north pier along the north margin of that pier, to its western extremity. My reason for recommending this form of barrier is, that it will stand on a base so firm that the force of no wind will overturn it.

Kenosha is a port of delivery for foreign importations, and there is a deputy collector for custom duties stationed here, belonging to the Milwaukee district. There is a coast light-house here, which bears north 78° 20′ west, and distant 824 yards from the eastern extremity of the United States north pier.

The accompanying statement marked C 82, shows the enrolled tonnage belonging at present to this port, to consist of five schooners amounting to 780 tons. It also shows that:

From March 1 to December 31, 1855, the number of arrivals and departures of vessels to and from this port was 2,012.

Total tonnage arriving and departing, 35,996.

Average number of arrivals and departures daily, 6.

Average daily tonnage arriving and departing, employed in the port trade, 117.7.

The statement does not include the ve[illegible]ch sought [illegible]ge here from storms during this period.

Owing to the operation of the recent rec[illegible] relation to the British provinces and the United St[illegible]tom duties collected at this port during the year [illegible]

The accompanying statement[illegible]ow the value of the commerce of this port for th[illegible]

Imports,	$3,620,950 00
Exports,	2,450,944 00
Total value of the commerce of Kenosha for the year 1855,	6,080,894 00

These amounts are derived from a careful examination of the custom-house records, and the warehouse and mercantile books of this place.

Enrolled tonnage, December 31, 1855,	730
Number of schooners enrolled,	5
Number of arrivals and departures at the port of Kenosha, from March 1, 1855, to December 31, 1855,	2,012
Tonnage of vessels arriving and departing in said period,	35,996
Average number of arrivals and departures daily in said period,	6
Average amount of tonnage daily arriving and departing in said period,	117.7

Seven vessels are owned here, and take papers from this port, in addition to those reported.

RACINE HARBOR, WISCONSIN.

In addition to the dredging done in 1854, at the expense of the government appropriation for the improvement of this harbor, the work of dredging was continued by the city authorities in 1855, and by this means a depth of nearly nine feet of water was, at one period of the navigable season of this year, attained along the whole of the channel-way between the piers. This is known from the draft of vessels that were enabled to enter. Notwithstanding all this dredging, the harbor and bar were found to be in a worse condition in December, 1855, than they were in on the 22d of July, 1854, a period anterior to all of the dredging above mentioned. We are here presented with a case for consideration similar to that mentioned in this report in relation to Kenosha harbor. We have here a practical demonstration of like effects produced by like causes. The distance between Kenosha and Racine, by the lake coast, is only 11¼ miles. There is nothing in the relative aspects of the two places that would cause them to be differently affected by the same winds, and there is no ostensible reason why the prevailing winds should not be the same at the two places. The great power which operates to produce the littoral or shore currents of the lake, is the prevailing winds, just as the great ocean current, called "the gulf stream," is produced by the trade winds. The first mentioned phenomenon is but a miniature demonstration of the same principle, which is more boldly shown in the other. The wind, acting in its most prevalent lakeward direction, combined with this littoral current, produces the great power which is constantly forming sand bars and shoals at all the harbor entrances on our extensive lake coasts. To counteract the effect of this great power, upon a given point, is what we have chiefly to contend for in planning the harbor piers for all the lake ports intended to be improved.

The cardinal point which an engineer first aims at in undertaking to plan any of these harbor works, is to ascertain, as nearly as possible, the direction and force of the prevailing winds. Erroneous information on this point will lead to an erroneous plan; and such, in fact, has too often been the case in accepting, as reliable, the reports of persons who have been perhaps long residents at a place, and who, therefore, were supposed to be well informed on the point in question, but who, in fact, had no means for forming an accurate conclusion, but had based their opinions on mere vague impressions, derived from very cursory and perhaps inattentive observations.

Racine is a port of delivery for foreign importations, and belongs to the Milwaukee district. There is a deputy collector stationed at the port of Racine. There is a coast light-house here, situated on an elevated bluff near the lake shore, and within the town plat near the intersection of the bluff, shore with Seventh street. The light bears south 4° 10′ west, distant 1,987 yards from the present extremity of the United States north harbor pier.

There are owned at the port of Racine 5 brigs, 18 schooners, and 3 sloops, amounting in all to 3,917 tons.

The total number of arrivals and departures at this port, during the navigable season of 1855, say from March 1 to December 31, was 2,768, being an average per day, during these 306 days, of 9 vessels.

The amount of tonnage which arrived at and departed from this port, during the same period, was 938,740 tons; or an average per day of 3,067$\frac{8}{10}$ tons.

The amount of duties collected on foreign importations at this port, during the year 1855, was $31,656 64.

The value of the imports to this port, domestic and foreign, by lake shipments alone, during the year 1855, was,............	$3,348,136 43
The value of the exports by lake, for the same period, was,......	686,378 57
This does not include the value of the exports into the interior of the country, which item I have not been able to get.	
Total value of the *lake commerce alone* at Racine, during the year 1855,..	4,034,515 00

The amount and value of the city trade of Racine, during the year 1855, was $3,016,050.

Nine brigs, 10 schooners, and 2 sloops, in all 21 vessels, belonged to the port of Racine at the termination of the fiscal year ending the 30th September, 1855. The total of this tonnage is 3,417 tons, which is valued (at $35 per ton) $119,595.

By railroads Racine is united in commerce with the valley of the Mississippi, and is a prosperous seaport.

MARINE DISASTERS ON THE LAKES.—The list of marine disasters on the lakes since the 1st of September, which has been published, is appalling, both with regard to the amount of property which has been totally destroyed, and the great loss of life by which it has been accompanied. The enumeration amounts altogether to over two hundred vessels, many of which, though not total losses, were nearly equal to that in the amount of damages sustained by the vessels. The total losses are known to amount to—

6 steamers, worth probably...	$300,000	9 propellers, worth probably..	$180,000
3 tugs " "	30,000		
40 barks, tugs and schooners,..	400,000	Total,..................	$910,000

To this has to be added the cost of 142 other losses in damages, many of which would cost for repairs and for salvage nearly as much as half or two-thirds the value of the vessel.

Besides all this immense loss of vessels, we have to add the valuable cargoes with which many of them were laden, and freights which were worth double the value of the ve As an instance, we need do no more than cite the loss of cargo which occurred f destruction of the Toledo. The same gale that occasioned her loss also wr Alleghany and the Globe, all propellers, with cargoes of great value. We think of the Toledo was estimated as worth $70,000 to $80,000

Again, the loss of life has been extraordinary. It is reckoned that about th persons have perished during the season.

These lists not only exhibit the immense wealth and the importance of th lakes, but also the growth of that trade. It is not too much to say that th this season are equal in value to nearly the whole of the marine employed ten years ago.

PHILADELPHIA CLASSIFICATION OF SHIPPING.

Adopted June 10, 1856.

The Committee on Surveys to whom we referred the Rules and Regulations for Grading and Reporting Vessels, with directions to submit such alterations and additions thereto as in their judgment may be necessary and proper, respectively report,

That they have given the subject their careful consideration, and now submit the annexed rules, which, in their opinion, will form the basis of a system best suited to the present condition of things, and the wants of the Board of Underwriters at this time.

The surveys and reports of vessels, their construction and equipments, are intended only as a guide to the underwriter, to aid him at arriving at a proper judgment as to the propriety of taking or rejecting a risk offered, or to determine the rate of premium to be charged.

The grades proposed have no reference whatever to value; they refer not only to the construction and materials, but to the condition and equipments for any proposed voyage; and a valuable ship of the first class owing to her outfit and repairs, under these rules, might possibly be reported at a very low grade. A reference, therefore, to the report, for the purpose of either a purchase or a sale, might lead to dangerous mistakes.

They must consequently be viewed as they are intended to be, private guides for the government of the officer taking risks, having no reference to any interest but that of the underwriter.

The reports are private property; the Surveyors are Officers of the Board, whose duties are indicated by these rules, and whose acts should not and are not intended to affect improperly the merchants' interests.

WILLIAM MARTIN, RICHARD SMITH, J. D. GEORGE.

FIRST CLASS VESSELS.

1. Vessels built with good white oak frames, keel, timbers, planking, bends, knees, beams, ceiling and clamps, with white or yellow pine decks, locust tree-nails through the bottom, and secured inside on the ceiling; copper butt bolted through the bottom and riveted inside, and otherwise properly bolted, and copper or yellow metal fastened up to the bends, built, rigged, and equipped in the best manner, shall be reported first class and graded A. 1, for ten years, if so long kept in efficient and proper repair.

2. Vessels built as above, except that the lower deck beams are of hard pine, having full sets of white oak knees to each beam, the upper deck beams of the same wood, with hackmatack knees to every beam, and hard pine clamps under each deck, may also be reported first class, and graded A. 1. The time assigned for such vessel to grade first class, to be reported in the survey.

3. Vessels built as aforesaid, except that the bottom plank and ceiling and bends, or either, may be of hard pine, and with hard pine deck frames, well secured with full sets of oak and hackmatack or iron knees, or part iron knees to each beam; or iron or yellow metal fastenings (if malleable) in such parts of the vessel as in the judgment of the Board of Surveyors will not injure the ship in her durability and value, nor the copper and copper fastenings thereof, nor the said iron fastenings be effected by such copper and copper fastenings, shall be graded A. 1, for six years, if so long kept in good and efficient order.

4. These exceptions form a first class ship in the timber, etc., with time assigned the vessel to grade A. 1, to be stated in the Report of Surveys.

SECOND CLASS.

1. Vessels that have passed the prescribed age of a first class vessel, and shall appear upon careful survey to be still in a sound and efficient condition, shall be reported second class, and grade A. 1½ for two years.

2. Vessels with a frame principally white oak, with an admixture of hackmatack, birch, beach, rock maple, or similar woods, partially copper fastened, partially deficient in hanging or diagonal knees, or where all the knees of such vessels are hackmatack or other wood than white oak; or vessels, which in their construction approximate to those of the first class, but only treenailed through the bottom plank into the timbers; or single deck vessels possessing all the requisites of a first class vessel except partner beams when the depth of hold exceeds 11½ feet, shall be reported second class, and graded A. 1½ for six years, and at the expiration of that time, if there is no evidence of working in the frame or planking, the same grade may be continued for four years longer, but the time assigned for this grade and other departures from first class, to be stated in the report.

3. Vessels having the requisites of those graded A. 1½ for six years, except that the ceiling, kelsons, breasthooks or pointers, are of soft wood, or a deficiency in quality and quantity of materials or inferior workmanship, may be (by the Board of Survey,) graded A. 2 good, as long as they continue to deliver cargo in good order, and show no signs of weakness.

THIRD CLASS.

Vessels of the following description to be Graded and Reported A. 2.

1. All vessels which have passed the prescribed age assigned to grade A. 1½, should their condition warrant it; also, all iron fastened vessels, although otherwise constructed of the best materials, as well as vessels constructed principally of mixed wood, such as beech, birch, rock maple, spruce or pine, with or without an admixture of white oak, if tree-nailed fastened into the timbers and butt bolted through the bottom.

2. Centre-board vessels, though built of the best materials, will not rate above A. 2, and it is especially requisite in this class of vessels they be well built and fastened; any deficiency in this respect will cause them to be rated at a lower grade than A. 2.

3. Vessels rated A. 2, will thus remain while kept in efficient repair and continue to deliver their cargoes in good condition, but will be reduced to a lower grade as soon as they fail in either of these particulars or show marks of decay or weakness.

NOTE.—In all cases the butt bolts are to be driven through the bottom and riveted on the ceiling.

When the Board of Surveyors and Reporters shall deem the materials insufficient in quantity, quality, strength, or fitness, or the workmanship, finish, outfits, and equipments of any vessel of an inferior or improper kind or quality, they shall, in consequence, report such vessel at a reduced grade with the fact of such deficiency.

In all cases when the tree-nails are not driven through the bottom

fastened inside on the ceiling, such fact to be stated in the Surveyor's Report, as also the fact of any vessel having lumber ports in the bow.

NOTE.—In all cases when vessels are so built as not to come within the rules and system of grading herein adopted, the Board of Survey shall report such vessels of such class and grade as they shall deem proper and right.

Insurance Co. of North America,	Arthur C. Coffin,	*President.*
Insurance Co. of the State of Pennsylvania,	John Stewart,	"
Union Mutual Insurance Co.,	Richard S. Smith,	"
Phœnix Mutual Insurance Co.,	J. R. Wucherer,	"
American Mutual Insurance Co.,	William Craig,	"
Delaware Mutual Safety Insurance Co.,	William Martin,	"
Washington Mutual Insurance Co.,	Charles S. Riche,	"
Columbia Mutual Insurance Co.,	Geo. F. McCallmont,	"
Philadelphia Insurance Co.,	Joseph Cowperthwait,	"
Western Insurance Co.,	William B. Norris,	"
Independent Mutual Insurance Co.,	John H. Diehl,	"
Commercial Mutual Insurance Co.,	Clement S. Rutter,	"
Anthracite Insurance Co.,	D. Luther,	"
Merchants and Mechanics' Insurance Co.,	J. D. George,	"
Atlantic Mutual Insurance Co.,	John L. Linton,	"
Hope Mutual Insurance Co.,	Gilbert S. Parker.	"

JOHN S. WUCHERER, *Pres. of Board.*
ARTHUR C. COFFIN, *Vice-President.*

TIMOTHY ROGERS, Secretary.

C. Gulager,
William Fleming,
John Gallagher,
Enoch Turley,
Thomas G. Monroe,
} *Marine Surveyors.*

ADVANTAGE OF EMPLOYING TUG STEAMERS.—(*To the Editor of the Morning Chronicle.*)—SIR: On the 28th October I instructed my friends in Liverpool to effect insurance on my new ship "Mississippi," say £6,500 stg. on ship, and £2,340 stg. on freight, the vessel to be towed down to Bic by one of Mr. Baby's Tug Steamers, and to sail on the 12th November; she left on the 10th. By the Persia's mail I have advice of its being effected—one half in Paris and the other in Hamburg, at 3¼ per cent. Another new ship left five days before mine, upon which Insurance had been ordered without saying she would be towed; her owner had to pay ten per cent. in England on ship, and 5½ per cent. in New-York on freight.

Insurance on ship, £6,500.			
Freight, £2,350.	3¼ per cent.		£309 15 0
Expense towing to Bic,			72 0 0
			£381 15 0
Insurance on ship without condition of towing, £6,500, 10 per cent.,		£650 0 0	
Freight, £2,350, 5½ per cent.		129 5 0	779 5 0
Gain by Insuring with condition of towing, stg.,			£397 10 0

Besides time, sailors' wages, provisions, &c. My ship "Indiana," also towed to Bic, made the passage thence to Liverpool in 21 days, arriving one day after the "Ottawa," Capt. Crawford, one of Messrs. Gilmour's ships, which had sailed from Quebec 24 days previously.

Quebec, 1st Dec., 1856. THOMAS C. LEE.

ON THE COMMERCE OF THE UNITED STATES OF AMERICA, WITH THE PORTS OF THE MEDITERRANEAN AND ADRIATIC SEAS.

The trade of the United States, with the countries on the Mediterranean and in the Levant, is very irregular and not yet developed. The statistics which we possess are of some value. MacGregor gives the best report on general commerce, and speaks, in regard to the Mediterranean trade in 1842, as follows:—

"The commerce of the United States to the ports of the Mediterranean and Adriatic, consists chiefly in the export of cotton, sugar, dried and salt fish, whale-oil, &c., which are shipped to Trieste, and other Austrian ports. The American ships take home in exchange wines, and other manufactured articles. To Spain, the United States export cotton and other produce, for which they take wines, &c."

A few words, with some statistics, will suffice to show the condition of American commerce. Since that time this commerce has increased, and in some respects received a considerable impulse, but on the whole it presents nothing of much greater importance. The causes are clear; the Americans have paid, until now, very little attention to this important trade; they are not enough acquainted with it, while their successful rivals are thoroughly conversant with its sources, chances, and necessities. English and French merchants have, thus far, the control of commerce in these important regions; they have agencies and branch houses, English, French and Austrian steamers running in the Mediterranean regularly, from port to port; while the Americans have not a single agency, and not one of their numerous steamers such as navigate the ocean, the Pacific, and numerous rivers, are to be found in the Mediterranean and Adriatic. Notwithstanding the passiveness of American commerce in these regions, it is still progressive, as the following statistics will show:—

The exports and imports of the United States, in the year 1842, were as follows:—

	EXPORT.			IMPORT.
	Domestic Produce.	Foreign Produce.	Total.	
Gibraltar	$466,937	$116,961	$582,998	$12,268
Malta	11,644	8,261	19,905	7,300
France, on the Mediter	1,674,750	73,868	1,748,438	958,678
Spain	221,898	16,578	238,476	1,065,640
Italy	515,575	304,940	820,517	987,[illegible]
Sicily	237,861	195,797	433,658	52[illegible]
Trieste	708,179	136,526	884,705	4[illegible]
Turkey	125,451	76,515	202,036	[illegible]

The same, in the year 1854, was—

	EXPORT.			IMPORT.
	Domestic Produce.	Foreign Produce.	Total.	
Gibraltar	$446,445	$81,327	$527,772	$[illegible],673
Malta	148,528	21,245	169,373	83,606
France, on the Mediter	1,218,786	201,374	1,420,160	2,889,372
Spain	3,212,368	31,040	3,243,408	1,579,074
Italy	1,586,327	165,439	1,751,766	971,074
Sicily	246,151	13,900	260,051	959,[illegible]
Sardinia	188,305	2,020	190,326	85,676
Tuscany	11,735	37,032	48,767	1,152,717
Trieste, & other Aus. ports	1,697,319	206,290	1,903,609	741,919
Turkey	219,496	105,702	325,198	803,114

From Tuscany and Sardinia we have no reports of 1842.

From these figures it can be seen, that the commerce in question has, as it regards some States, greatly increased. The most remarkable is that of Spain, in the Mediterranean. The export to that country has augmented thirteen times. Also an important increase is seen in Malta, Italy, Trieste and Turkey. The commerce of France, however, on the Mediterranean, diminished considerably, also that of Sicily. From both these reports we learn also, that the commerce of the United States in the Mediterranean has not been developed in such admirable manner as with other transatlantic countries, to which numerous mail lines and other steamers are running. What influence these communications have on trade and commerce, the comparison between the trade of France on the Mediterranean, and of France on the Atlantic, shows:

Export To, and Import of the United States, in the year 1854, *from France.*

EXPORT.

On the Atlantic,	Domestic Produce		$29,749,466
Mediterranean,	" "		1,218,786
Atlantic,	Foreign "		978,355
Mediterranean,	" "		201,374
Atlantic Ocean,		Total	$30,727,821
Mediterranean,		"	1,420,160

IMPORT.

On the Atlantic Ocean	$32,892,021
Mediterranean	2,889,372

The commerce in the first direction, where the steam-line exists from Havre to New-York, shows $63,013,842 ; and the commerce between the United States and France on the Mediterranean, where no steam communication exists, was only $4,309,532. The difference is enormous! Marseilles is much behind Havre, which, by its direct steam communication with New-York, attracted the greatest part of commerce.

Let us take, now, a view of the countries on the Mediterranean in general. All depend for the expedition of their letters from the English post-offices, if they do not prefer to send them via Trieste, Ostend and Liverpool; for in both cases the postages are very high and expensive, and as the letters have to pass through several different offices, the loss of time is in both ways very great. These difficulties, and we might add nuisances, have an influence in keeping the commerce back, and to them it is chiefly attributable, that the commerce of these countries with the United States has progressed no faster. Mr. Baker, who lived for several years as American Consul in the Mediterranean, and observed pretty closely the great progress of commerce between these parts of the globe, hinted to his countrymen, several times, to pay more attention to the Mediterranean trade.

"Thousands on both sides of the Mediterranean," says Mr. Baker, "prefer American to other produce. Especially are flour and rice highly prized. The commerce with dried and salted fish is profitable. The greatest part of the staves and lumber which are used on the shores of Spain, are mostly imported from the United States. Also other produce, such as biscuit, different kinds of oats, sperm-oil, spermaceti candles, lard and provisions, find here ready and good markets. The port of Malaga is much frequented by American vessels; the same may be said of Barcelona, the great emporium of Spanish wines and brandies, where American import articles find good sale. But very few American vessels visit Cartagena, Alicante and Valencia, where American produce would be saleable, with profit.

The cargoes which American ships take up in those places, are mostly brandies, red and white wines, silk goods, shawls, cloths, woollen goods, paper, laces, saffron, nuts, raisins, and other dried fruits, olives, &c.

As to the commerce with France, only Marseilles participates in it, and this very little, in comparison with the great trade with the United States. The advantages of Havre have already been stated.

Of commercial ports we name also, Genoa, Leghorn and Messina.

The old plan to connect Genoa, by a regular steamship line, with New-York, has now been taken up anew, and will be soon in readiness. This connection is expected to give a powerful impulse to the Italian commerce, and also to awaken greater interest on the part of the Americans. Until now the Italian commerce with the United States has not been of much importance, compared with what it would be, had it frequent and regular communication. Of American articles, there are sugars of Louisiana and Cuba, as also American grain, highly appreciated, imported by Genoa, and again shipped to the Levant and other smaller ports. On the other hand, the articles exported from Genoa are many, and in the United States in fair demand. They consist in fresh and dried fruits, olive oil, soap, silk goods, damasks, velvets, linen, gloves, ribbons, liquors, prepared marble, &c. American articles for export to Genoa, are indigo, dye-roots, honey, provi-

sions, butter, &c. Rosin and pitch are bought freely in Genoa, and re-sold to other smaller ports in the Mediterranean.

The commerce of the United States with Tuscany presents interesting features. Tuscany exported, in the year 1854, to the United States, a value of merchandise of $1,152,717—much more than Trieste and the other Austrian ports together. The United States exported to Tuscany, of her own and foreign produce, not more than $48,767. This small figure is more remarkable, as American produce is in fair demand at Leghorn. For Sicily, the ports of Palermo and Messina are the most prominent. From these are exported to the United States, wines, fruits, extracts, oils, brandies, argols, tongues, sardines, prepared marble, senna, cantharides, soap, leeches, &c. The Americans export there stockfish, salted and dried meat, sugar, zinc, lead, indigo, cochineal, dye-woods, cotton, cocoa, coffee, flour, tobacco, &c. The commerce with Sicily is important. England has, however, as will be seen, the lion's part.

As MacGregor relates, the import in Sicily was, in the year 1844, 744,630 pounds sterling; the export, £1,035,026. The whole commerce with the exterior, £1,779,656. Of this the United States exported only £58,489; and imported from there, £224,988. In the year 1854, the United States exported to Sicily only $260,051 (£52,000); and imported from there $959,300 (£191,860); which shows a decrease on both sides. This decrease is a peculiar fact, if we consider the quantity and quality of the articles there consumed. It can only be explained by the great activity of England, and the little attention paid to this quarter by Americans. Busied with the great commercial projects on the Atlantic, and culture in the interior, they have not yet found time to pay more attention to this commerce, and not being much posted up in the market prices in Sicily, they ignore partly the importance of that trade.

It is now time to act with energy. The energy will not be missed while the communication with the Mediterranean will be facilitated and trade increased. The commerce of the United States with Trieste, and other Austrian ports, is not satisfactory to the great wants in the transatlantic markets, nor to the sales of Austrian manufactures, which are considered of very good quality. Cloths, woollen goods, linen and silk goods can be had from Austria, at cheap prices and in fair quality. Nevertheless, the import of the said articles, in 1853, was $73,964,237. Other Austrian articles would also find good market here, by a regular and quick communication.

As to the Austrian ships, very few sail into the Atlantic. In the year 1854, only four Austrian ships came to the United States. Considering the passivity with which the commerce with the United States is regarded, it will not surprise us that so little is done between them. What has been exported from Austria to the United States, during 1854, via Trieste, and other Austrian ports, was not more than $741,919. In fact a great sum

compared to the many good industrial articles, and its navigation, as also its ports, of which especially Trieste and the world-renowned Venice seem to be called to play a great part in the future commerce with the United States. The export of the United States to Trieste is much larger than their import from Austria, and was, in the year 1854, not less than $1,903,609.

The direct commerce of the United States with Turkey is fixed by the following data: To Turkey, the United States exported, in 1854, merchandise in value of $325,198; importing from there, $803,714. This is a very poor trade, if we consider the means of both parties. This trade is in its first development, and will be soon increased, if the Americans will take hold of it with their usual enterprise. Greece and the Ionian Islands are entirely forgotten by the Americans; no direct commerce is carrried on from there to the United States.

Mr. Baker says, "The commerce with the Morea would be of the greatest importance to the Americans, if they would only attempt and explore it. The great quantity of produce would easily procure re-cargo to American vessels. The demand for zinc, lead, &c., is permanent, also of fish; rice, flour, and other American produce, would find easy market. The same," says Mr. Baker, "of the Ionian Islands, where a good trade would result."

INDIRECT COMMERCE.—As to the indirect commerce of the United States to the Mediterranean, there are very meagre data. The total export of the United States in 1854, to all the ports in the Mediterranean, of goods not produced in the United States, was only $953,417. These foreign productions consist in coffee, tea, cocoa, leather, skins, pepper, rum, dye-woods, sugar from Cuba, segars, cochineal and honey.

As to the American indirect import from those countries, it is difficult to find it out. The lists of navigation give only the direct trade; and at the nominations of the value of importation from the States on the Mediterranean, no port is named from where sent.

England, which has the greatest trade with the Mediterranean ports, and which is from there extended in all directions, keeps no direct ship communication from there to the United States. Of the 8,508 British ships, tonnage 1,748,380, which came, in 1854, to the United States, not more than 820 tons were from Gibraltar; not one single ton from Malta! The cause is natural. England finds it more in her interest to do the commercial tradin- with Mediterranean and Levantine produce to the United States, directly, but from Liverpool and other ports. The advantage of proceeding is easily explained.

The English merchants receive, through Liverpool, regular repo the Collins and Cunard steamers, of the standing of the transatlanti kets. This puts them in the way to use there all the chances off dispose of their rich stocks of Mediterranean produce with advanta United States. The same is the case in other ports of the

Continent, which follow the same policy. In this way considerable quantities of white and red wines, fruits, drugs, and other produce of the Mediterranean, come by indirect commerce to America.

We take, for example, the corinthes, which are exported from Zante and Corfu to England, and other European ports, from where they are sent to the United States in small quantities. It is the same with other articles, to countries where the Americans have no direct communication. In addition to the ports already named, we can add, under the same category, the rich islands of the Turkish dominions in Europe and Asia, viz: Cyprus, Rhodes, Candia, Samos, Mytilene. Even from ports regularly visited by American vessels, goods are sent indirectly to the United States. This is the consequence of the isolation in which the United States are placed, in relation to those ports. In Smyrna, the large storing place of the produce in the Levant, where merchants of all nations have a counting-room, there is no American. It is the same in the other ports of the Mediterranean, the Adriatic and the Levant. This isolation is advantageous to the indirect intercourse of the English and French with the United States; both are in the fortunate situation to turn the chances of both hemispheres to their advantage. Mr. Baker, in speaking of the commerce of the United States with the French dominions in Africa, viz: Algiers, Tunis, Tripoli and Morocco, says: "It would be very profitable for our commerce, if the Americans would engage in this branch. They would convince themselves, very soon, that such an undertaking would be very profitable. This advice has not been followed up to this time, at least there are no statistics that there has been any imports from there. These are almost exclusively African, and mentioned only in general terms, without branches of commerce in these dominions."

The American export to Africa in general, in the year 1854, amounted to $1,804,729, the imports to $1,386,560; of which proportion, $47,708 and $30,007 belong to Madeira; Teneriffe, and other Canarian Islands, $20,417 and $39,598; Cape of Good Hope, $299,958 and $448,903. There is no data for the other African territories. According to late disclosures, there are considerable numbers of vessels which leave American ports to embark secretly in the slave trade, land them at Cuba, and import a considerable quantity of goods from Africa. Americans can buy many kinds of African produce from the great caravans of the Mecca pilgrims, which traverse Africa in its greatest extremity to the Mediterranean.

From the above, it will be seen that the Americans appear in the Mediterranean, as well as in the Levant, as far less than a mercantile power of the first class. And it is but too plain, that these great and rich territories, for hundreds of years the centre of shipping and commerce of well-advised nations, are by the Americans very much neglected. England and France are in opposition with steamers and manufactures, on the Mediterranean,

Adriatic and Levant. The mail lines of the Cunard, Collins, Bremen and Havre steamers are not sufficient for our steam commerce with Europe, and a Mediterranean line, alone, will be found to answer the interests of American commerce. And through all this, the great project of the Pacific Railroad and Marine Telegraph across the Atlantic will the sooner be brought to completion. It is to be hoped that Trieste, and the Austrian commercial community in general, will not allow such progressive movements to pass, without considering that the same which has been done by the small city of Bremen, can be done by Trieste with its powerful resources. Bremen can give satisfactory proof of the importance of a steam communication with the New World. Bremen has exported, in 1854, not less than $14,643,927. Bremen is much ahead of Hamburg, on account of its steam communication with New-York, as its exports in 1854 were only $2,322,971. Trieste would have double the advantage; it would have all the direct commerce with Austria, and the indirect connection with the Mediterranean and the New World. The project is great, but promises well-paying results. It can be developed by a direct, regular and quick connection with New-York. It is also well to mention, that Austria would, by these means, come into a more productive relationship with the Orient, as the commerce of Austria can look to a very prosperous future, on account of the marine telegraph from Sardinia to Constantinople and Alexandria, as by the connections of the Mediterranean and the Red Sea. A. L. F.

THE SOUND DUES.

It is announced that England has agreed to pay to Denmark, as the price of redeeming the dues heretofore payable by vessels passing the Sound, a capital sum calculated on an annual revenue of £45,000 sterling. The bargain is not a bad one for England, for it appears that British vessels at present pay £70,000 yearly as passing tolls. Denmark will be compensated for the loss by receiving a capital sum which will be safe from the dangers of a fluctuing European policy.

The peculiar feature of this transaction is, that before it was proposed Great Britain found herself, in consequence of the resolution taken by the United States, in a dilemma from which it was difficult to escape. Denmark is a debtor of England; and the revenues of Sound dues were evidently the most substantial guarantee for the payment of the debt. To adopt the step taken by the United States and refuse to pay the impost at all hazards, would be to sacrifice the only pledge which England, as a creditor, had. It was clear that Denmark, if deprived of this her principal source of revenue, would become insolvent. On the other hand, it was impossible to continue to pay dues which another commercial nation had shaken off, for that would have been to give an important advantage to the latter. Great Britain, therefore, had no other course to take but to agree to the capitalization of these dues, especially when it became certain that the United States was willing to accede to the proposition.

This is but the first step towards relieving mercantile navigation from the burdens imposed upon it by the fag-end of a used-up system of legislation in violent contradiction with the actual tendencies of commerce; and in proof, the ship-owners of Sunderland [England] are moving for the abrogation of the tolls imposed by the city of Hamburg on vessels going up the Elbe.

THE EMPLOYMENT OF APPRENTICES IN THE COMMERCIAL MARINE.

THE well-known necessity which exists for improving the class of community which mans our shipping, and constitutes the sinew of our commercial arm, demands the attention of our statesmen. It is undeniable that our seamen are falling lamentably short, not only in number but efficiency; and measures must soon be taken to arrest the ebb-tide in the *personnel* of our marine, or else our commerce will sooner or later experience disastrous results from the evil of *green-horn* sailors. Indeed, we have already suffered too long, and too severely, to remain insensible of the mischief which has been caused through the ignorance and disregard of duty on the part of such persons as now form the staple of our seamen.

From bad men we cannot expect good officers. If the common sailor is degraded, it is all the easier for unworthy men of ambitious, but reckless minds, to rise to the position of master. In these days the master is fortunate to get one-fourth part of the crew quite equal to their duties, nor is he less so to secure the aid of an efficient officer, while the owner is equally lucky to get a good master into his ship—the poor underwriter is worse off than either, being exposed to all the fires, from the owner down to the cabin boy. A general unfitness for duties, and shirking of responsibility, is the curse of every trade and profession of the present time. In men's haste to run over fortunes, the old landmarks of capacity, probity, and justice to all, have been partially obscured.

Mariners have quit the sea for trades ashore, while tradesmen have *jack*-ed it a voyage only to see the world; dock-laborers have turned sailors, while sailors have become stevedores, until nearly all good men have forsaken the sea in disgust, or betaken themselves to quarters and employments where more money can be made.

It is the defect of this country that few workingmen now study any particular trade or calling, but spend their time from boyhood in tinkering at all of them. We are without system in the training of manual operatives. The consequence is unfitness for all the duties belonging to any. The old system of apprenticeship has been very generally discarded as unsuitable to the genius of our people and the working of republican principles of government. But we sadly want something in its place. The apprentice system was defective; it failed to secure a knowledge of the trade or calling which was sought. The artificial relations of master and apprentice were too often antagonistical, hence the failure.

The one radical mistake in apprenticing boys has been to leave undefined the course of instruction which shall be given by the master, it being taken for granted that he will promote the interest of the apprentice, but this by no means follows. On the contrary, it has too often happened that the *industrial student* is resolved into a *machine for money-making*; his ambition,

taste, and industry, have been crushed rather than developed, and the boy becomes but a poor workman after giving away his time, and cheating his employer. Will this system work better if applied to seamen?

We have before us a Bill which was introduced in Congress, May, 1856, by Mr. Pelton, of New-York, from the Committee on Commerce, providing for the employment of apprentices in the commercial marine of the United States. It will probably be taken up, and passed during the present session. It provides that on board of every vessel engaged in ocean navigation there shall be kept and employed by the owner a certain number of apprentices, to wit: for every vessel of one hundred and fifty tons, and less than three hundred tons, one apprentice for every one hundred and fifty tons; for every vessel of three, four, and five hundred tons, two apprentices; for every vessel of six, seven, eight, or nine hundred tons, three apprentices; for every vessel more than nine hundred tons, one additional apprentice for every five hundred tons above nine hundred. Provided, however, that in all cases where the master of any vessel is owner, or part owner, or shall sail the vessel on shares, the apprentices required shall be kept and employed by him.

Now, it is not every master that is a proper person to bind an apprentice to, nor is every boy that may apply a suitable one to take as an apprentice. Yet this bill obliges every vessel to carry apprentices, and equally obliges the masters to take them, if they apply, saying nothing of their characters, or fitness, for the calling of a sailor. Commissioners are to be appointed by the Secretary of the Navy to carry this proposed law into effect. Boys are made eligible for apprenticeship at the age of sixteen years. Apprentices are to be kept out of the forecastle, be clothed and fed, and taught to read and write, and the general rules of arithmetic, together with navigation and seamanship. No provision is made for the duration of the term, or for the payment of wages. We think a small sum should be named for spending money, such as all young persons want, and will have.

Section 9 provides that an apprentice may be punished for disobedience, or refractory conduct, to the extent of imprisonment to compel a return to duty. We demur to such proceedings—if a boy and master disagree let the former be discharged.

We think another section imposing a fine of fifty dollars on the ship for each apprentice which may be lacking from her complement, rather hard; since the ship may thereby be compelled to take bad boys if good ones do not offer; and we foresee that there will be a great demand for boys so soon as this bill shall become a law. Many more good boys will be wanted than can be found willing to become sailors, and place themselves under the commands of all sorts of men, such as command our mercantile shipping.

We fear that the compulsory features of the bill will render it unpopular and little good will ever result from its passage in its present form. It is our opinion that some form of encouragement would be better than coercion

to introduce young blood into our marine arteries. Assimilation must precede nourishment; and shipmasters compelled to train boys in seamanship, and boys compelled to serve out their time to hard masters, with accompanying abuses on both sides, will result in but little good. Cannot a better system be devised? Let the Committee on Commerce try again.

The following remarks upon the bill under discussion have been offered to us since writing the above; they are from the pen of an experienced shipmaster, and are entitled to great weight.

"The draft of this bill appears to me to be crude and imperfect in its details.

By the first section it appears to be left to the commissioners to say what shall be a *reasonable* time for the act to take effect, whereas the act itself should fix the date for it to go into operation; and the expression ('for every vessel of 150 tons and less than three hundred tons, one apprentice for every 150 tons') seems curious; why not say, for every vessel of 150 and less than 300 tons, one apprentice; for every vessel of 300 and less than 600 tons, two apprentices; for every vessel of 600 and less than 900 tons, three apprentices, and so on.

By section 2, it seems that any male citizen of 16 years, no matter what his character or conduct, may be forced upon any shipowner or master, whether such owner or master is willing or not, for by line 13 it seems to me to be made imperative on them to sign the indentures.

Section 3 gives almost anybody power to force an unruly boy on board of a ship.

Section 5 gives the Secretary of the Navy a wide field to foster his favorites or political partisans, and to fix their salaries, a system which appears to me to be a great evil in our political institutions; better let the Legislature elect the Commissioners.

I see nothing objectionable in sections 6, 7, 8, and 9. But by the succeeding section it is shown that it is in the power of any apprentice after he shall have obtained an education, and become of some value to his master, to run away; and thus the master must lose his labors, or be subjected to the expense and annoyance of hunting him up, which I think but few would undertake; but it may be said that this evil is counterbalanced by the fact of one more seaman being added to the marine force of the country.

In section 11, Consuls are included in the number of officers who may issue a warrant for the apprehension of a deserter; but who is to execute a Consul's warrant in foreign countries, where no treaty exists to provide for it? I once shipped a crew in Liverpool, and went to Bristol, where they all deserted; and together with the Consul, I called at the Mayor's office for authority to arrest them, but was refused. The Mayor said he had no power to grant an order for their arrest, as he said, "my articles were not according to act of Parliament."

Section 13 is all very well, except that the penalties are too slight.

Section 16 places it in the power of any apprentice to exact seamen's wages for three months from any owner who may lose or sell his ship; for by section 14, the apprentice cannot be transferred without his own written consent.

Section 18 confirms what I have said in relation to section 2. A ship of 1400 tons may be obliged to take four unruly boys as apprentices, who would be far more likely to corrupt a crew of seamen than the same number of old salts.

Some measures are absolutely necessary to increase the available marine force, and it seems to be the duty of the national legislature to devise and enforce those measures. Would it not be well to increase the complement on board the Home Squadron, surveying ships, and revenue cutters, by giving sufficient encouragement for lads to enlist for short periods, and when their time is out to discharge them, to swell the resources for merchant ships, replacing them always by new recruits?

But after all, I apprehend that for a long time to come, the American commercial marine must be dependent upon foreign countries for seamen; for so long as labor on shore continues to maintain its value, no thinking American youth will consent to pass through the ordeal of a ship's forecastle, and be subjected to the brutalizing influence of a sailor's boarding-house, unless there is a prospect of early advancement to the quarter-deck, which cannot accommodate all; and those who have not the good fortune to succeed, will become disgusted with the service, and quit it for something more congenial on shore.

In this view, it appears that there is a field for some of our enterprising machinists to exercise their talent in devising a suitable and economical application of steam or hydraulic power, to perform the heavy work on shipboard. Getting the anchors is the heaviest work we have to do, and I see not why the power of a small engine may not be simply connected with the many recent improvements in windlass gearing so as to raise the anchor rapidly, while the puny human force we are able to command, is exerting its feeble power in making sail. G. C.

VOLCANO AT ISLAND OF ONNIMASK.—The following is a memoranda of the ba Frazer, at San Francisco, Nov. 5;—First part of the passage had fine weathe 1st and 2d inst. had a strong hurricane from the N.W. All the whale fleet left the 2d of September for the Sandwich Islands. They had as a general thing bad, on account of the long pervading fogs. The Alice Frazer stopped at the St. Paul for water, but found there had been a drought. The natives had the interior for a supply. Remained in the sea one month after the fleet left a volcano burst out on the Island of Onnimask. Some five ships were lying ne time; water was hove some 800 feet; it then receded, and lava came forth, decks of the ships, but done no damage.

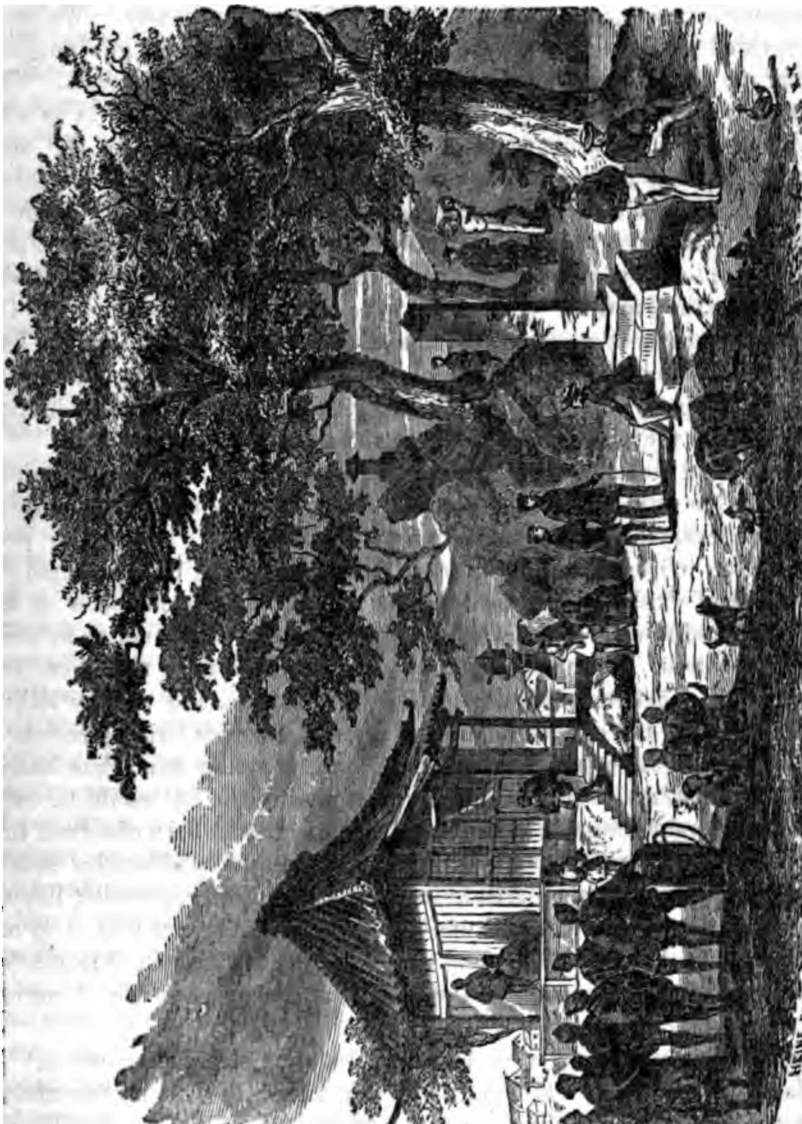
COASTING IN JAPAN.

VOYAGE OF THE VINCENNES' LAUNCH FROM SIMODA TO HAKODADI.

[Continued from page 264.]

THERE were a thousand persons, perhaps more, all cheerful and full of curiosity. They gazed, wondered, laughed, and were delighted with the novelty of our visit. So dense was the throng that we found scarcely room to put foot upon the shore; they made way, however, and several of our crew landing, kindled a fire, encircling it with a lead line. This fire was at the base of a rock, and as many Japanese as could perch upon it, watched with curious eyes the preparations of the seamen. Volumes of rising smoke forced them at times to turn away their heads to avoid suffocation, and their contorted features, as they pertinaciously maintained their position, produced roars of merriment from the crowd below; there was a general jubilee, and the confusion of voices wearied the ear. The boat was hauled out over her anchor, and by a small line kept conveniently near; for it sometimes happens that an accident suddenly changes the whole character of a scene like this, and it is well to be always prepared for such a change, however remote it may appear. There were no officials to be seen; whole families were in the throng, and so little did they apprehend harm that the women were anxious to bring to us their children that they might be amused by a near view of the strangers, and every one wore a smile. Mr. Berry remained in charge of the boat while we walked into the village; not one of the people followed us, they were willing that we should gratify our curiosity as they gratified their own. The houses, as at Sino Hama, were of wood, their floors three or four feet above the ground, the fronts of sliding panels easily thrown open, the windows of paper instead of glass; projecting roofs afforded shelter from the sun or rain. It being harvest-time, sheaves of wheat imparted an air of agricultural plenty to the place. Narrow lanes with high walls traversed the village, which we found much more extensive than we had supposed, for irregularities of the ground and shrubbery concealed the greater portion. In one of the enclosures, some distance from the shore and beyond the sound of the gathering crowd, we saw a gray-haired man sweeping; his back was towards us, and we entered the court unperceived awaiting the moment of surprise. A slight sound attracted his attention—he turned and saw us—his eyes became fixed—his jaw fell, and broom in hand he presented a picture of stupid amazement. In a few minutes he as suddenly turned away and tottered into the door of his house. Sauntering leisurely about the court, we were observed by a younger Japanese to whom we bowed; he returned our salute, and upon intimating to him by signs that we desired some water, he caused a cup to be brought with which we drank from a well.

We then visited a store, which contained a great variety of goods, it



LANDING PLACE AT SIMODA.

[From Perry's Expedition to Japan. APPLETON & Co. New-York.]

might be termed a variety store, for there were provisions, cotton stuffs, iron, agricultural implements, pottery, and straw sandals. A general assortment of such things as the people of a village would require. The proprietor, a venerable man, entered immediately after us, and smiling seated himself at the counter in readiness to serve us should we propose to buy. We were not provided with the coin of the country, and therefore bought nothing. Leaving the shop-keeper seated at his counter, we continued our walk. The streets were nearly deserted, a few children that we met looked at us with some surprise and a slight want of assurance. The dogs were the only creatures disposed to dispute our passage. Besides these, there were many cats, as great favorites with elderly females in Japan as in any country. The labor of the farm seemed to devolve principally upon the women and old men; we saw several of the former engaged in threshing wheat. It was the fishing season, and the young men were occupied in that pursuit. On our return to the boat we found the crowd even greater than when we left. We could not discover in it any person of authority, but we found two individuals of superior manners, each wearing two swords; they were invited into the launch that we might explain to them the object of our visit.

They availed themselves of the invitation with alacrity, and we entertained them as well as our limited means would allow, and having permitted them to examine everything that particularly attracted their attention, we produced a letter written in the Chinese character, which had been prepared for the purpose of explaining to the Japanese of the coast the character of the expedition, and to assure them that the objects in view were such as to merit their approbation. In composing this letter, it was assumed that there was among them a general desire to acquire information, and that by telling them in a simple and concise manner of some of the most striking results of scientific investigation, and by exhibiting to them at the same time instruments and illustrated works, their interest or their curiosity would be excited, and a favorable impression made upon them. It had been observed that there were among them persons who exhibited, or, at least affected a certain degree of superiority to their fellows, and we knew that they would, in supporting their pretensions, dwell upon these remarkable revelations to our advantage, and that we should meet with some countenance in that quarter, independent of the genuine regard of those who were susceptible of impressions of a higher character.

The peculiar phraseology of this letter requires some explanation. In translating first into the Chinese, it was found that the interpreter understood it more readily than in the usual form.

It is literal, and therefore to persons unfamiliar with the peculiarities of those people, it may seem a very extraordinary epistle. With these explanatory remarks, it is given as an essential portion of the history of the adventure.

"Certainly it is not proper for any but officers of high authority to say anything to me in relation to my reasons for coming here. If there are such, I will communicate to them for their understanding that which is proper they should know.

"We are friends of the Japanese.

"Indeed, we are not at war with any nation. Perry is of our country, and has agreed with the government of Japan that there shall be no distrust between the Japanese and the Americans; therefore, we desire to be as family relations with you.

"I am now on the land for the purpose of making astronomical observations, which cannot be made on the ship, because of the movements of the waves. Such observations must be made on the solid land—even the walking of men on the ground near me, when I make those observations, injures the work.

"It is well that for our mutual good feeling you should know what people we are, and what we intend and will do.

"In our country there are learned men who study all the laws of nature—the flowing of the waters, the movements of the winds, the growing of the plants, and the habits of all living creatures. They have penetrated the earth, and it is known to them.

"Their object is to learn, for the benefit of all men; because it is certainly good to discover all the sources of happiness afforded by the earth.

"So many learned men have devoted themselves to these noble pursuits, that now there is scarcely a shell in the sea, a plant, or an animal on the land, that they have not examined, named and described; and I can show some of their books.

"Others have learned so much of the sea, that all its great movements are known. And storms can certainly be predicted by instruments that we possess. Even the typhoons are so well understood, that as soon as one begins to blow, we can tell which way to sail to avoid its fury.

"Learned men have named all the stars that you can see; and their movements are all known: by those stars, or the sun, or the moon, we can, with our instruments, tell exactly the place of the ship, wherever it may be.

"It is true, that if our nation was at war with any other nation, the ships in which we now visit Japan would be permitted to pass unmolested through a fleet of war-ships belonging to the other nation. Because, all the nations have agreed that these pursuits are the most noble, and that nothing but good things can come from such work.

"Let your mind be opened to the consideration of these great truths. Let the Japanese assist, by their reception of us, in this highly-to-be-praised work. It is desirable that you should write for me in the Chinese chara

ter, of such things as will add to the knowledge of our learned men; and it would please them to read a composition written by you.

"We are going to the sea of ice, to study and to learn for the benefit of all men.

"The people of the ships to which we belong, have been appointed, by our government, to do these things. They unite a perfect knowledge of all that relates to war with a higher order, which is to benefit all mankind. Signed, * * *

This letter was handed to the one of most prepossessing appearance, whose countenance indicated considerable intelligence, and whose general demeanor was that of a well-bred gentleman. He took it with some show of trepidation, and having read the first part relating to officers of authority, he transferred it to another, a much older man than himself—probably one of the literati. The whole party then clustered round, while he read aloud, occasionally pausing to discuss some portion of it, always turning to us when the question was settled, and bowing, in token of approbation. Having received these people into our boat, we experienced some trouble in preventing others from assuming to themselves the same privilege. Towards evening, several fishing boats came in, and others left port. We here first saw a portion of the great fishing fleet employed on the mackerel ground, in the vicinity of Cape King. The boats are about forty feet in length, and twelve in breadth, flat-bottomed, square sterned, with high sharp stems. They are decked and furnished with compartments in which the fish are kept in water. They are usually manned by thirteen persons; one directs, and twelve work the sculling oars and steer. These boats are particularly well adapted to the character of the coast; they will ride a very heavy sea, and may land in high surf without danger. The sculling oars, of which there are two or three on each side, are very long, composed of two pieces, and work upon pivots, supported by beams projecting a foot or eighteen inches beyond the side of the boat. They are very powerful propellers, and are more effective than our oars in a sea way. The men are very athletic, finely formed, graceful in their movements, and take great pride in their skill. When urging their boats to speed, an operation in which they exhibit great physical power and endurance, they hiss between their teeth at every sweep of the oar. One foot is advanced upon the gunwale, the other in the rear; the oar is seized with both hands, the weight is thrown upon it, and a powerful impulse communicated; long practice enables them to throw their bodies over the water, and by the springing of the oar to recover themselves; in this way every muscle is brought into action, and there can scarcely be a more animated scene than that presented when several of these boats compete with each other. The men are unencumbered by clothing, with the exception of a cloth about the loins.

As there were no interpreters, we carried on our intercourse by means of signs and some written questions, replies, and statements, written in the Chinese character. They were short but expressive; two or three may serve as specimens of all:

"When I am ready, I will depart."

"The signs of bad weather prevent our going to sea now."

"We are in distress from want of water."

"You must not trouble us."

As they saw that we were furnished provisions, they gave us to understand that they could not spare any, though, subsequently, during the night, many kinds of eatables were thrown into the boat. Among others, a kind of cake seemingly prepared for voyages; it was very hard, and heavy, but translucent; on being moistened, it swelled, became white, and crumbled. It is, doubtless, an excellent preparation. In the evening we went on shore, and the persons whom we had invited into the boat, were disposed to show us attention. We all seated ourselves on a grassy bank, and they desired to re-read the letter. We read aloud, without interruption, save an occasional expression of approbation. When it was concluded, the senior of the party put his hands on our shoulders in a kindly manner, bowed several times, then tapped his forehead, significantly, with several expressions of satisfaction. He then presented some comfits to us, and it was amusing to observe the remarkable dignity and thoughtfulness of his manner; certainly there was a degree of ease and confidence associated with it, that we would not have enjoyed without this expression of philanthropic sentiment.

These relations established, the elders seemed to consider themselves at liberty to follow the example of a numerous band of children, principally girls of six or eight, who, during the reading of the letter, had cautiously approached until they could examine our clothes; finding that they were not repelled, they crept still closer, until they could slyly touch us, as if to assure themselves of the reality of our presence. They felt our clothes, our shoes, our hair, our skins, looked at our necks, felt our pulses, and compared their beats with those of their own. All this was done with such deliberation and care to avoid rudeness, that we could not take offence, but permitted them to gratify their curiosity.

As it became dark, they kindled a fire, and spreading mats aro[illegible] reserved for us the places free from smoke, and refreshed us with [illegible] tea. A little practice in pantomine enables people to communic[illegible] each other much more readily than one would suppose. We were [illegible]larly struck by the shades of meaning susceptible to that mode [illegible]sion.

Sleep is indicated by closing the eyes and inclining the he[illegible] palm of the hand. But death is expressed by half closing the

ting the jaws to fall, throwing back the head, and extending the arms, with the palms of the hands upwards and open. These signs were not only understood by the Japanese, but as well by the Tchuches, inhabitants of the North Eastern extremity of Asia.

We returned to the boat and retired; but were long kept from sleep by the inquisitive crowd upon the rocks. They continually hauled on the stem line, in order to peep by moon-light under the tarpaulin covering. At length we discharged a pistol, as a hint that their company could be dispensed with for the night. They then left us in quiet. The moon, partially enveloped in light cloud, was encircled by a halo. The first faint blush of dawn had scarcely appeared in the sky, when we were awakened by the voices of our friends; they had resumed their stations on the rock, and the scene of the day before was repeated.

At five in the morning we bid them adieu, though the wind was still adverse. About two miles from Sino Hama we passed another small junk harbor, in which several of these vessels were lying at anchor. When off shore at the distance of two miles, we found the water more than fifty fathoms in depth; one cast indicated a bottom covered with fragments of shells. By a second cast we obtained a small live crab, with sand that resembled in appearance black pepper. We were more fortunate than in our previous attempt to weather Cape King, and soon after the sun had passed the meridian, we entered an extensive bight in which Siebold locates several villages and anchorages. The bottom at eight fathoms was characterised by comminuted shells and nodules of clay, that could be broken between the fingers. Passing the village of Firo Tatzi, which is situated on the shore, near Cape King, and which consists of about a thousand houses, we met some of the fishermen of Siro Hama, who had left that port the preceding evening; they were pleased to see us, and threw some mackerel into our boat. We gave them some fish-hooks, which they considered an ample return, and to gratify us, or to display their skill, they put their boat in rapid motion.

Following the curve of the shore, in the evening we approached a village with the expectation of finding a harbor, but were disappointed: for the only protection was such as a few scattered rocks afforded, breaking the force of the sea sufficiently to permit the flat-bottomed and light boats of the fishermen to be beached, when they were immediately hauled up beyond the reach of the waves.

When we had arrived within a few hundred yards of the shore, the inhabitants of the town were perceived running from point to point, making signals, which we construed into invitations to land, or to anchor. But a heavy swell rolling into the bight, and increasing near the shore, broke with great violence, so that as soon as we were fully satisfied that no protection

could be found there, we tacked and stood off. On the shore were numerous sacks of straw, such as the Japanese use in transporting grain or salt.

There were also rows of conical hills, covered with straw, probably some article of export to other portions of the coast—charcoal or salt.

We saw three considerable villages in the bight, not including Utsiura. The day nearly spent, and the wind dying away, the oars were manned, and just as the night came on, we were off the third town, which, from the more broken character of the coast, we hoped would at least offer us an indentation in the land, if not a secure boat harbor; but were again disappointed, for this harbor was more dangerous of approach. The narrow channel was so blocked up with rocks, scarcely a wash, over which the swell broke, that even the natives who were accustomed to enter it were obliged to wait for a favorable moment, and we observed that then they were forced to make sharp and quick turns to avoid hidden dangers, not visible to us. Several of their boats were lying near us, watching our motions, and we tried to prevail on them to furnish a pilot to take us in, but although willing to precede us in their own boats, they would not venture with ours. The weather, which had been fine, was changing; dark clouds were coming from the south west, and the barometer indicated an approaching squall, which might be followed by a gale from that quarter. It was therefore incumbent upon us to decide quickly, and with a parting glance, accompanied by some emphatic expressions of contempt, for the place on the part of the seamen, who had toiled at the oars to reach it, we turned away to seek room at sea, in the event of a gale.

A light breeze still held from the eastward, and we availed ourselves of it to hasten out into deep water. It grew dark, and we were congratulating ourselves on speedily attaining a favorable position, when a sudden roar was heard close on the weather-bow. Every eye was instantly turned in that direction, and there we saw a huge wave breaking in a wall of white foam for a quarter of a mile; the helm was immediately put up; for a moment it seemed that the breaker would reach us, but it gradually subsided, and we watched in vain for its reappearance. So close and sudden was this interruption to our course, that the crew uttered a simultaneous exclamation of surprise. We supposed that the breaking of this wa
due to its being larger than usual, and its passing over a shoal of a
fathoms—not much less than four fathoms, or the other would
broken. The shoal is about three quarters of a mile from the s
ship would probably venture so near.

It called our attention to the fact, that in running along t
coast, sudden dangers appear when least expected. Had
struck the boat broadside on, she would have instantly foun
past eight it rained heavily, but only for a short time; a l

lowed the rain, and, as from the extreme darkness, we could not see the approach of a heavy squall, we followed the old mariners rule, which some poet has thus expressed:

> **First the rain and then the wind,**
> **Take in light sails, and keep them in.**

The counterpart:

> **First the wind and then the rain,**
> **Take in light sails and set them again.**

We went further; we took in everything and remained quietly floating until it lightened up. We then reefed, and laid by for the night, head off shore.

We expected to see in the morning the large town of Utsiura, which, by Siebold's chart, appears to be well marked by the land. As the day broke, we made sail and stood in. Hardly had we proceeded a mile when we saw several boats coming off from the land. The wind was falling away—in fact, it was nearly calm. They came directly towards us; their crews yelling like North American Indians; their numbers rapidly increasing, until, to our surprise, we counted no less than eighty of these boats, each propelled by twelve men, shouting, yelling, and hissing between their teeth as they swept their oars. We made suitable preparations for their reception, should they prove unfriendly, and with much interest awaited their arrival. As soon as they came near enough to make out the character of our boat, they moderated their speed, and remained at the same distance, examining our appearance with the most intense curiosity. But as the number of boats increased by successive arrivals, they became excited, for three or four only could come at once, close alongside, and those who arrived last, full of impatience, forced a way among the others, and when the whole eighty had reached us, there ensued a scene of confusion and excitement that we had never seen equalled. If we had any doubts as to the character of their intentions, they were speedily removed; for the principal anxiety which they exhibited, was to get near enough to give us fish, grain, bread, tobacco, radishes and firewood; and our only apprehension was of being swamped in the press, or of losing our spars.

For some time we endeavored to keep our course, but that was soon rendered impracticable. It is due to their skill to state, that they managed their boats with great dexterity, though there was a constant crackling of timber in the melee. Each boat carried on her gunwale bundles of long cane poles, and they seemed as fenders to the sharp stems that were cutting in every direction.

In the midst of the confusion, one of their boats got athwart our bows and foul of the jib-boom, which bent with the strain. This so enraged the coxswain at the time engaged in rigging it in, that he drew off with his boat hook to strike the Japanese helmsman. This rash and inconsiderate act,

had it been carried into effect, might have led to deplorable results; for if these people were hospitable and kind, it is all the more probable that they would have resented so unexpected an assault. And however superior our arms and appointments, their numbers would have given them a fearful advantage; a timely admonition averted the danger. At length, finding that we were completely hemmed in, and that they were becoming very familiar, we manned the oars, and breasted them off, but they still followed, and again pressed on, preventing our pulling, and it was not until we called their attention to a revolver, and then discharged it athwart the bows of their headmost boat, that they dropped astern. This we did in a laughing manner, as a gentle hint. Knowing they would understand our meaning, several of the men in the bows of the boat, across which we fired, hearing the whistle of the bullet, imagined they were shot; some of them fell, while others went, in three or four bounds, from stem to stern of their boat. They immediately recovered themselves, and, laughing merrily, sheered off, at the same time hailing other boats that were approaching us from ahead, to do the same. They have, doubtless, a great respect for fire-arms. The fish obtained from them were mackerel and sardines; there was also a minnow of some species, not more than an inch in length, but of finer flavor than either of the others. We saw a few herring. They were eager to barter, and it is probable that in the evening, when they have the proceeds of a day's fishing, enough might be obtained to freight a schooner of large size. We regretted that we were not provided with a greater quantity of goods to give them. At Simoda it was exceedingly difficult to persuade the people to accept anything, except in the most covert manner. The prohibitory laws are very stringent, and are executed with corresponding rigor. These fishermen seemed to harbor the idea, that in so small a boat we must needs be starving; they admired her very much, particularly her rudder and sails, enabling her to tack so easily. Whenever the gaff top sail, or other light sail, was set, they uttered exclamations of delight. Their largest vessels have but one mast and one sail. Every boat that saw us as we ran along this part of the coast, would out sculls and put after us with might and main.

With a light breeze from east south east, we were moving slowly on towards Cape Kaminoto, when, suddenly, we perceived [illegible] junks at anchor in the harbor of a town we supposed to be U[illegible]s probable that the harbor was large enough for ship[illegible]n for the entrance.

(*To be Continued.*)

THE CLIMATE, COMMERCE, AND PROGRESS OF THE REPUBLIC OF CHILI.

CHILI is now one of the best governed, and most flourishing Republics of South America. The civil wars which formerly distracted the nation, and ate up the substance of its industry, decimating its male population, and crushing out the freedom and intelligence of its brave people, have happily terminated; and under the wise government of its present chief magistrate, who has recently been re-elected to the Presidency of the Republic, Chili bids fair to rise to a commanding position in the South Pacific. The government is modelled after the system of the United States, and this fact should create a strong bond of sympathy between the two Republics. We regret that so little of the trade of Chili passes through the hands of American merchants, and that England and France have hitherto almost monopolized the foreign commerce of this thriving State.

The American resident in Chili is struck with the fact that the English and French merchants have labored insidiously to prejudice Chilian people against the "Yankees," whom they would fain hold up in derision as wanting, not in intelligence and enterprise, but in rectitude, and those moral virtues which must ever form the basis for an extended commerce among nations. They enlarge upon the dangers of a fillibustering propensity, which is said to underlie all American enterprise directed to foreign countries, and various artifices are resorted to for damaging "Yankee" character, whereby they expect to secure the trade of Chili to themselves evermore.

England and France have hitherto furnished Chili with what mercantile craft she has had "second hand" and cheap. The government has never had any considerable *naval* force, if we except two or three second-hand steamers, which have been lost. A French naval constructor is engaged at a salary of $1200 a year—has *nothing* to do, and is believed to be quite competent to do it. An iron tow-boat of very light draft for the river Maule, has recently been constructed by the Novelty Works in New-York; and, being built in sections, has been shipped to its destination. We believe the government is now on the point of contracting in England for a war steamer. We regret that American skill has been overlooked. We can build a more efficient vessel, for less money than the English.

As in other South American States, Chili has entered upon a career of rail-road enterprise which is highly creditable. The chief road is being built from Valparaiso to Santiago, the capital, which is situated in the most delightful and healthy region of the interior. We doubt if there is a more inviting climate in the western hemisphere than that found in Chili. The productions of tropical and temperate regions are both supplied from the soil, while mines of silver and copper ore enrich the exports of this favorite nation.

The only drawback upon the progress of Chili may be found in the conflict between the civil and ecclesiastical powers, which, we trust, will be of short duration, if it is not now amicably settled. A system of public instruction is receiving a gratifying amount of exertion for its introduction, and is favorably accepted by the people.

Chili has the largest number of national schools of any of the Spanish republics—the number at the present time being 829, besides private seminaries.

Government has determined to repeal the duties on the exportation of copper, should the fall in prices in England prove permanent, and affect that important branch of industry. This duty produces at present about half a million of dollars.

The last harvest has proved abundant. Earthquakes sometimes visit Chili, and are said to be more frequent in October and November than at any other period of the year.

Comparing the public revenue of the republic for the years 1854 and 1855, we find:—

1855—the public revenue was	$6,287,526 25
1854— " " "	5,946,216 92
In favor of 1855	$341,309 33

And this increase has been constant for the last twelve years.

The reduction of the national debt, both foreign and interior, is steadily progressing; and now the foreign debt is only $6,899,500, and that of the interior, $1,960,400.

In the value of the exports and imports for the year before mentioned, we find also a considerable increase, viz:—

IMPORTS.

1854	$17,428,299
1855	18,438,285
Increase	$1,009,986

EXPORTS.

1854	$14,627,156
1855	17,676,911
Increase	$3,049,755

Banks of issue, deposit, and discount, have been established in Santiago, Valparaiso, and other cities. A life insurance association, a fire and marine insurance company, have been also formed, all of which are flourishing.

A new line of auxiliary screw clippers has been opened between London and Valparaiso, via Cape Horn, the first of which (the Chili, 1,000 tons burthen) was to sail from the former place on the 20th Oct., and f Plymouth on the 25th, for Valparaiso direct.

A line of English mail steamers are plying along the South American coast, from Panama down and up. They are old-fashioned affairs, and it is high time that some American company should take hold of this coasting commerce, and put on steamers of a suitable tonnage and reasonable speed to do the business that is now being monopolized by the "slow coaches" of our island friends. Nor is this all—the British Pacific Steam Navigation Company so manage the trips of their steamers as to discommode as much as possible the American merchant traveler, or his correspondence; the determination being evinced to discourage American competition for the trade of the west coast of South America. In this course they persist against all remonstrance, and we shall be compelled to place American boats on the route in self-defence, ere long. Chili abounds in coal, to which the furnaces of steamers using it must be adapted.

RECOVERING SUNKEN VESSELS.

THE amount of property annually lost by the sinking of vessels of various kinds in our harbors, rivers, lakes, and off our coasts, is very great. The greater proportion is never recovered for the want of adequate facilities for discovering its location and ready means of grappling it. Not a day passes but that two or three vessels of some description, either ship, steamboat, barge, brig, schooner, sloop, or canal boat, is sunken in the United States. In the year of 1855, the number of sailing and steam vessels sunk around the coasts of Great Britain, and not recovered, was 385, besides barges and lighters without number. Such is the *annual* loss of this character. The absence of suitable means for raising vessels in England, has led to the development of an extensive plan, and the formation of a company with large capital, adequate to this object. This is a new enterprise in the annals of stock company operations; and when we consider the extent of losses, and the consequent scope of employment, we see no reason to doubt the feasibility of making fortunes from submarine wrecking.

Smith's patent ship-lifting and submarine surveying apparatus, which is the machinery adopted by the company in question, consists of two auxiliary propellers, placed side by side, secured at a suitable distance from each other to admit of a vessel being raised from the bottom between them, the raising machinery being worked by steam-power. A powerful tug-boat accompanies the lifting vessels to aid in towing. A surveying steamer attends to the discovery of wrecks, for which purpose she cruises along the coast, or around a harbor, towing behind her two or three boats, furnished with crews and submarine diving apparatus, in which persons descend to reconnoitre the bottom as the steamer moves along. After a sunken vessel

is discovered, encircling chains, in number and strength sufficient to raise her, are passed around her, and made fast by divers, when the ship-lifting vessels are brought over the spot, and the lifting power attached.

In the above operations, about one-half of the expense is directed to the discovery and preparation of the wreck for raising. The first operation in recovering a sunken vessel is very naturally to *find* it; the second is to sling it by chains so that it can be lifted. This last is as difficult as the former is doubtful, in the absence of knowledge and practical means for that purpose. The question arises—*how* can we *find* sunken vessels and prepare them for lifting at least cost? The plainness and simplicity of the answer, though applicable to vessels only before they have sunk, is the best evidence of its truthfulness. To prepare an object for finding on the bottom, we have only to *buoy* it before it sinks; and to prepare it for raising, it is only necessary to apply fixtures for that purpose while it is above water. Combine these facts in any practical manner, and we have the elements for cheapening the enormous expense attendant upon every case of sunken vessel recovery.

An invention of this kind has been brought forward and illustrated in the *Nautical Magazine* and *Naval Journal*, to which reference can be made by persons interested in fitting their vessels for recovery from the bottom, in case they should ever meet with an accident of that kind. Every vessel navigating shallow waters should be provided with some means of finding and lifting it if sunk. Many a wreck is abandoned to recovery, not because it cannot be raised, even with the rudest devices, but for the reason that it cannot be *found*, or slung, with certainty, and for a reasonable expense.

In New-York harbor the raising of sunken vessels is mainly done by the Floating Derrick Company. Such is the extent of their operations, that in the harbor of New-York alone, since the organization of this company, they have raised one large ship with cargo on board, twelve steamboats, one U. S. revenue cutter, one brig with cargo, forty-three schooners and sloops, and 132 canal-boats, most of them laden—in all, 190. Other means have been resorted to during the same period for raising vessels, not included in this enumeration. *Finding* the vessels and *slinging* them constitute all the uncertain and difficult labor of the Derrick Company.

It is their opinion that if all vessels liable to sinking were provided with Joseph Hyde's invention, to which we have alluded above, an imm saving of expense would be realized in case of recovering them. S boats, barges, and canal-boats, are especially liable to be stove and and should adopt some means for submarine recovery. An ounce vention is worth a pound of cure.

We see that Capt. H. Whitaker, of Buffalo, has been awarded a Bronze M American Institute, for the best model of a side propeller. We are glad to judges, Messrs. C. H. Haswell and Eckford Webb, who are gentlemen every have shown their appreciation of this improvement.

THE MISSIONARY PACKET "MORNING STAR."

It gives us pleasure to place on record, in our pages, one of the most interesting enterprises connected with missionary operations ever consummated in Christendom. Not more auspicious for the elevation of mankind was the advent of the "Mayflower" bark upon the New-England coast, than the occasion of the memorable launching of the "Morning Star." May she go forth on her errand of glad tidings to the islands in the far-off ocean with as signal success as she took her first majestic leap into the sea from her builders' hands. For the spread of civilization, and the realization of those blessings flowing from the introduction of Christianity among heathen nations, this beautiful vessel will prove a most useful auxiliary.

We tender our acknowledgments to Joel Knight, Esq.; the Rev. S. L. Pomeroy, of the "Board of Foreign Missions," of Boston, and Jotham Stetson, Esq., of Chelsea, for the readiness with which they have furnished us authentic particulars of the design and construction of the "Morning Star."

"'The American Board of Commissioners for Foreign Missions' sent its first missionaries to the Sandwich Islands in the autumn of 1819. That entire group is now Christian. But two or three thousand miles to the south-west are numerous clusters of islands, extending through forty degrees of longitude and twenty degrees of latitude, and all of them north of the equator, except a part of the Kingsmill group. To this region has been given the general name of 'Micronesia.' The principal groups are Kingsmill, Marshall's, Caroline and Ladrones. The islands of this section of the Pacific are very numerous, but not large. Since 1852, several missionaries have been sent from this country to Micronesia, and have established themselves on the islands of 'Strong' and 'Ascension' with encouraging prospects of success. Strong's Island is known to the natives by the name of 'Oualan,' and Ascension by that of 'Bonebe' or Ponepe. There being no regular or reliable means of communication with those parts of the habitable world, it became necessary, if these missions were to be sustained and others established, that the Board should have a vessel of its own to visit and explore those remote seas, and lend its aid in a great variety of ways. Accordingly, it was resolved to build a missionary packet of about 150 tons burthen. A vessel of this size, it was thought, would be better adapted to the work for which it was needed, than one of larger dimensions. In about three months from the time the contract was signed, the packet was launched from the shipyard of Mr. Jotham Stetson, in Chelsea, near Boston. She is said, by competent judges, to be built in the most thorough and workmanlike manner, and after a model which secures both speed and beauty. Her name is the 'MORNING STAR,' significant of the work she is to do, as the herald of a brighter day soon to dawn on those 'dark places of the earth.'

"When it had been decided to build this little craft, an 'appeal' was issued to the 'children and youth' connected with those Reformed Dutch, Presbyterian and Congregational churches which sustain the American Board, to furnish the requisite funds. The estimated cost was a little over $12,000; the actual cost, including extra sails and various items of outfit, was a little over $13,000. The sum needed was divided into 120,000 shares, at ten cents each; and a certificate, ornamented with a vignette of the 'Morning Star,' was engraved and furnished to purchasers of one or more shares. The hope was expressed that all the shares would be taken by the first of December, when she was expected to leave port on her errand of mercy. On the day mentioned, $14,000 had been received, and the tide had not begun to ebb.

"On the 2d day of December, 1856, at ten o'clock, A. M., she left India Wharf, and went down the harbor on her way to Honolulu, under the command of Capt. Samuel G. Moore, with first and second officers, steward and six seamen, all selected with much care.

"She had on board as passengers, Rev. Hiram Bingham, Jr., and his wife, who are destined to Micronesia as missionaries of the American Board. Mr. Bingham is the only son of Rev. Hiram Bingham, one of the first company of missionaries to the Sandwich Islands, who sailed from Boston 37 years ago. The father was present at the embarkation of his son, and assisted in the religious services held on the occasion. This son was born at the Hawaiian Islands, but educated in this country. His wife was Miss Minerva C. Brewster, of Northampton, Mass. In this enterprise of planting Christianity and Christian civilization in those central regions of the Pacific, the now Christian population of the Sandwich Islands are expected to bear an important part, which indeed they have already shown their readiness to do.

"The 'Morning Star,' should she survive the 'perils of the sea,' is expected to have her headquarters at Honolulu. From that port she will, in due time, sail for Micronesia, and, with some well qualified missionaries on board, will make an exploring tour among the islands, and may be reasonably expected to furnish the world with some valuable information in respect to that interesting 'Island World' so rarely visited by civilized men.

"33 PEMBERTON SQUARE, *Boston, Dec.*, 1856."

The following beautiful verses will not be deemed inappropriate by the reader of refined culture; they reflect the pious anticipations of a true missionary zeal:

THE MISSIONARY SHIP.

A VISION.

I SEE a bright and beauteous thing,
  Whatever it may be;
It seems a bird with snowy wing,
  Skimming along the sea.

It sheds a radiance all around—
  Old ocean sweetly smiles;
The waves leap up with joyful bound,
  And hail the distant isles.

The winds are wafting it along,
  It moves right on its way;
It hath a message—hath a song;
  It will not, cannot stay.

Ten thousand little cherubs play
  Above it and about,
And in their own sweet cherub way,
  Utter a cheerful shout.

This blessed little ship they love;
It is the "MORNING STAR,"
Freighted with tidings from above,
And cometh from afar.

'Tis bound for islands fair and bright,
Embosomed in the sea;
It carries love, it carries light,
Salvation great and free.

Beloved youth and children dear,
Came with their little stores,
And built this ship, with right good cheer,
To bless those distant shores.

Is this a vision of the night?
Kind children, what say you?
Ten thousand tongues and faces bright,
Reply, "WE'LL MAKE IT TRUE."

The "Morning Star" is of fine model and neat rig, and has been built in the most workmanlike manner. The launch was attended by about three thousand persons—men, women and children—the latter being in "a clear majority." Great delight animated all faces.

From a staging near the bows of the vessel, one of the secretaries called the vast audience to order, and when all were attentive, he said: "You all know that a little while since, a missionary packet was found to be necessary for the good work in the Pacific Ocean. A 'circular' was addressed to the children and youth, giving them the privilege of raising the $12,000 needed. That 'circular' was sent out through the land, and no sooner said than done—HERE SHE IS—and will be launched in a few minutes.

"She is called the 'Morning Star'—can you tell why? When that bright star comes up, it announces to all beholders that the great sun will soon lift his head above the horizon. So, when this beautiful packet shall approach and land the missionary and the word of God on one of the dark islands in that far-off ocean, it will be a sure sign that a new day is about to dawn, and the Sun of Righteousness soon to rise upon them."

The vast assembly then united in singing the Missionary Hymn—

"From Greenland's icy mountains."

An appropriate prayer was offered by Rev. Dr. Worcester, of Salem, after which, Rev. Mr. Langworthy, of Chelsea, said: "We want our young friends to keep quiet a few minutes longer, and then they may swing their hats and wave their handkerchiefs, and shout at the top of their voices." He then alluded, in a familiar and interesting manner, to the feelings which they doubtless had on this occasion, and hoped they would all consecrate their lives to the service of Him who died for their salvation.

The Doxology was then sung, in the tune of Old Hundred—

"Praise God, from whom all blessings flow."

And now all eyes were fixed on that "beautiful thing of life" which was about to leap into the sea. In a few minutes she began to move, and gracefully took her position on the element for which she was designed, amidst the cheers and shouts of the vast concourse round about. It was an occasion to be remembered.

BOYS AND PETTY OFFICERS IN THE UNITED STATES NAVY.

BY A MAN-OF-WAR'S MAN.

We clip the following brief exposition of naval life, and prospects of youth entering the United States service, from the columns of the *New-York Herald.* We commend the remarks of the writer to the thoughtful of high and low station, both in the Navy and out.

Why cannot the *Naval* service of the United States be so conducted as to offer the most inviting opportunities to the youths of our country, desiring to become seamen, for acquiring a perfect knowledge of seamanship? Why not organize at least a portion of our Navy into a school for seamen? We think it would be practicable to devise a system for the training of young seamen on board our ships of war, where a thorough maritime education, manual and mental, could be given, and sailors fitted to command either a gun or a ship—to handle the boarding pike as well as a marlinspike. If not, why not?

United States Frigate Savannah,
New-York, Nov. 27.

Having lately returned to the "land of the free and the home of the brave," we, of tarry hands and sun-burnt faces, desire to give you and your readers a few items of our late cruise, and of naval doings generally.

We design to discuss in this letter the relative advantage of becoming a naval seaman with that of becoming a merchant sailor. Now, take our own case as an example: W shipped in the United States naval service at the age of sixteen, and the first sailor-like piece of work which we were required to do, was to black an officer's boots; the second was to rub a gouty leg, and numerous other seaman-like jobs; and we firmly believe we would have been retained in this emulating and highly interesting business of boot polishing and gouty leg rubbing until the end of the cruise, if we had not strenuously resisted it.

When the youthful aspirant to seamanship enters the naval service, he expects to become a thorough bred seaman; but the naval officers, and that august body which handles the reins of government, think otherwise; and instead of making seamen of the boys in the navy, they convert them into messengers and side boys, and teach them the highly ingenious art of striking a bell, running errands, doffing their hats to every gold band which pops itself over the gangway—no matter whether on a white or a black head—and it is not an unfrequent thing with us in the Savannah to doff to woolly heads, in the shape of Brazilian officers, which was peculiarly unpleasant to us.

And what are the inducements held forth by that scientific and very respectable body at Washington to decoy boys from the peaceful, quiet and improving influence of their homes? Why, after spending a hard life of confinement of about twenty-two years in a man-of-war, they will become "petty officers." And what is a "petty officer" on board of a man-of-war? Those who have had any naval experience can answer the question very readily; but those who have not will do well to inform themselves on the subject. A "petty officer" has one of the most ungrateful situations in the world. If the "petty officer" fulfils the duties of his office to the letter—which he is strictly enjoined to do by an order of the navy—he incurs the displeasure of the ship's company, and gets severely "punched;" and if he does not fulfil the duties of his office, he incurs the displeasure of the executive and commanding officers; so there he is—to use a nautical phrase—"jammed between two winds," not knowing which way to turn, not knowing whether to perform or neglect his duties; and no one who regards his life as a valuable and irrecoverable piece of property, will accept the situation if he can possibly avoid it.

In this age of universal knowledge, when sailors use tooth-brushes instead of marlinspikes scented soap and extract of new mown hay instead of "slush" and tar—in this age, when the lowly are as well informed as the lofty, no boy of common sense will enter the Unit

States naval service before the mast, until there are other inducements held forth than those of becoming "petty officers" after many years of servitude. He can enter the merchant service, and in far less time, if he has any energy at all, become the first officer of one of our first class clipper ships. It is not an unfrequent thing in this age of fast progress, to see a first mate at the age of nineteen, and a captain at twenty-two.

Why can't we do in our service as they do in the French navy, and reward merit where it is due? You may there behold the bright star of an Admiral glistening on the breast of a man who once wore the blue frock of a "Jack Tar." And yet we profess to be republicans of the first water, honoring merit wherever it is to be found.

If any of the youths of our country wish to become good seamen, let them enter a new merchant ship, where the new rigging has to be turned in afresh and set up anew, blocks to be strapped, hawsers to be pointed, ropes to be spliced, and, in short, every species of work to be done appertaining to the maritime profession; let him go a long East India voyage, and before the trip is completed, he will not only learn these things, but a great many more, indispensable to a thoroughbred sailor. If he goes in a man-of-war, if he be not an extraordinary smart young man, it will take him six years to become an ordinary seaman.

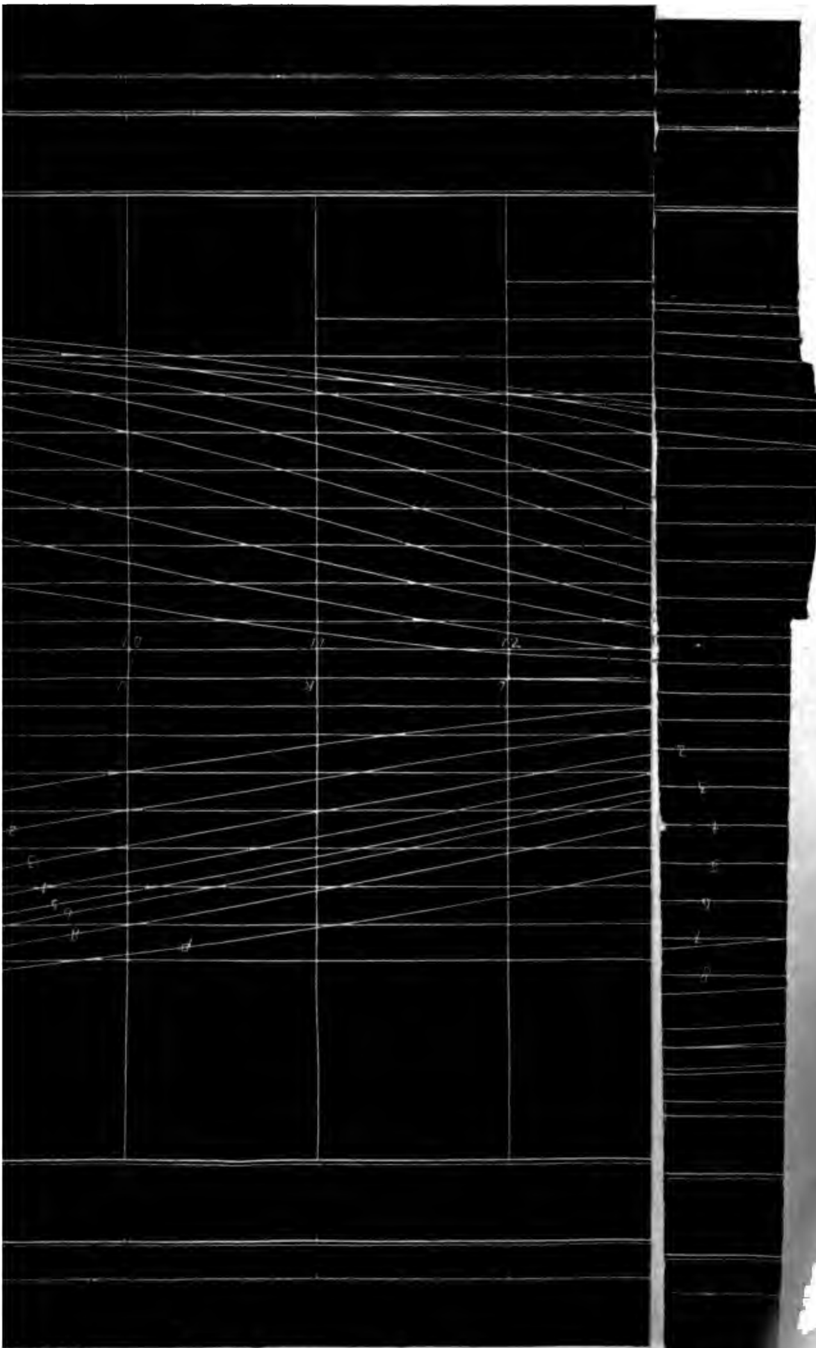
Our cruise, as a general thing, has been a pleasant one, with one or two exceptions, namely—not enough liberty and too much exercise at the latter end of the cruise. During the whole cruise of the Savannah—for a period of three years and four months—we had but three liberties of forty-eight hours each. Now, we wish to know how Congress expects to get good American seamen in our service under the present system? To be sure, we have the best pay and the best victuals of any navy in the world, which is plainly shown by the corpulent appearance of some of the Englishmen we shipped on the coast for Americans, one of whom said he was half starved when he came into the ship, and now he is as fat as any beef-eater in England. But good American seamen will not enter our navy unless they get more frequent leave to go on shore. Americans, more than any other nation in the world, detest confinement. Born in a land as free as the air they breathe, used to liberty of conscience, liberty of thought, and liberty of action, they cannot, and they will not if they can, submit to the incarceration of a man-of-war life.

They punish a man most severely in this ship for being drunk—the same unfortunate cause which brings two-thirds of the men into our navy. Let a man be ever so good on board the ship, if he goes on shore and gets intoxicated, he get punished for the offence; but let an officer come on board dead drunk—which has often been the case this cruise—and nothing is said to him. We have been told by old salts—we do not pretend to know the fact ourselves—that this ship's company is the soberest ever known in the United States Navy.

It becomes our painful duty to announce the only accident that happened during the cruise. On the night of the 24th of November, Major Freelove, a boy about seventeen, a native of Massachusetts, while attempting to clear the log-chip, under the counter, fell overboard. The life buoys were cut away, but it took thirty-two minutes to lower the life-boat, when it should have been done in two. The night life buoys were not let go, because they have not been attended to during the entire cruise. Night life-buoys are made to act with lights, so that a man may see them in the dark. We mention this fact because our commanding officer is so particular about trivial matters, and it seems strange he should be so neglectful of this. After our beloved Commodore Salter left the ship, the crew became depressed in spirits, and wished to return home. Never was a commander more beloved than was Commodore Salter by this ship's company. The day he left the ship to return home, there was not a man or boy who did not shed tears at his departure; and even to the last day of the cruise, when the band would play his favorite tune, "Father Land," every heart beat with joy and every face became refulgent with smiles.

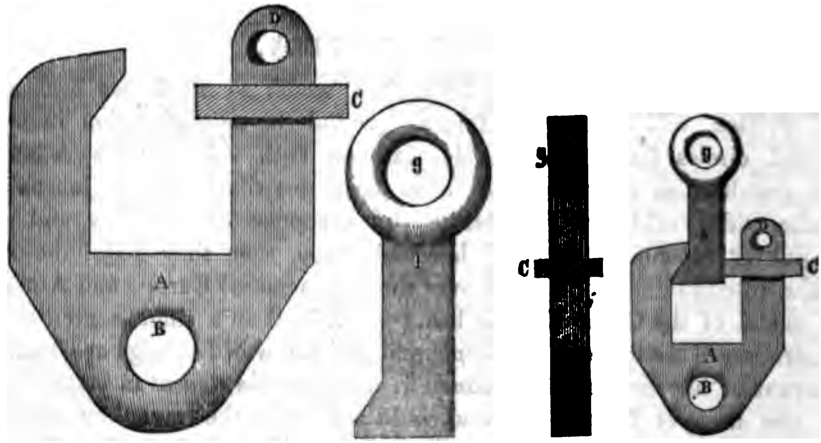
We had a pleasant run of forty-five days, and arrived here, in the "Empire city," on the 27th of November. Our ship's company will be paid off in eight or ten days, and then we will all separate for our homes.

MARLINSPIKE.



THE GREAT EASTERN.

THIS great leviathan of the deep, about which so much has been said and written, will continue to furnish ground for animadversion in commercial circles for a considerable time on both sides of the Atlantic. The peculiarities of her model have been described by the journalists of the Old World, and re-published by the press of the New, and still the public know little more of her real shape, than they do of the Ark of the antediluvian world. All over the continents of Europe and America the model of the Great Eastern has been defined in a single sentence—an illustration of *the wave line principle*, and still the world at large are entirely ignorant of her form, from the *savan in science to the student in mathematics*. No one has yet been found who could tell what the wave line principle means. Scott Russell, of London, has taken to himself the credit of having discovered it, but how to apply it to any practical purpose in the formation of vessels for navigable purposes he has never shown, nor has any body else. Very much importance has been attached to the improved models of the United States, and the builder of every fast vessel has been charged with having applied the theory of Mr. Russell to his model, while in truth there is not a ship-builder on the western side of the Atlantic who can define in his mind's eye the wave line theory as applied to the shape of vessels, although claimed to have been introduced by Mr. Russell, nor are our transatlantic friends more fortunate in the discovery and application of this fanciful theory, if we may judge from the form of the vessels they build, and in this category we are quite willing to place Mr. Russell himself, he being a London ship-builder, and the builder of *The Great Eastern*. If it is intended by this broad assumption of wave line principle, to claim all hollow lines, both on the anterior and posterior ends of vessels, we have only to say that hollow water lines both forward and aft have been adopted in giving form to vessels for nearly one hundred years by the French, and also by the Spanish naval architects; vessels having hollow lines of flotation have been built in the United States for at least forty years. Beyond the concavity of water line, we are unable to discover the least analogy between the present mode of giving shape to vessels, and the unadapted theory of Scott Russell. We furnish with this number the lines of the Great Eastern, and have only to add that if she is to be regarded as the exponent of the wave line theory, her owners will find that they have not a profitable vessel—her passengers will find that she is not a comfortable vessel, and Mr. Brunel will learn that she does not conform to the principles of nautical science.



LIEUT. BLUNT'S BOAT DETACHING APPARATUS.

THIS invention is designed to avoid the danger of a boat being swamped, or stove, when lowered in rough weather at sea, by suspending it from the tackle in such a manner as, that on taking the water the boat will instantly detach itself from the tackles, and remain secured to the vessel by the painter only.

The mode of accomplishing this desirable result is as follows: A is a strong piece of iron, brass, or other suitable metal, about six inches long, and one and one quarter inches thick, to be fastened to the head and stern of the boat, in any suitable manner, by means of the eye, B. On one prong of A, will slide freely, the piece of metal, C, which is prevented from slipping off the prong by a pin through the hole D. F is a piece of brass or iron about five inches long and one and one quarter thick, attached through the eye *g*, by a shackle boat, to the hoisting tackle. The lower end of this piece fits into the piece A, which is attached to the boat, and is kept in place when the boat is suspended, by the action of the sliding piece, C, which presses the wedge-shaped side of this piece against the similar-shaped prong of the piece, A. The weight of the boat keeps all fast until it takes the water, when C slides down, and F swings clear.

This invention has been applied to the boats of the "Arctic," commanded by Lieut. Berryman, in the late exploration of the Ocean's bottom across the North Atlantic, and a very favorable report of its utility has been made. It has likewise been fitted to one of the boats of the steam frigate Minnesota for the purpose of testing its efficiency. The inventor is now deceased, and his widow, Mrs. Blunt, is the proprietor of the patent.

Our readers will perceive that this ingenious invention is quite unlike Lieut. Brooke's method for detaching boats from the davit tackles. Both inventions appear to command favor from nautical men, and there is plenty of sea-way for the introduction of each. We cannot undertake to prefer either to the other. They are both good, and will, no doubt, be duly appreciated by seamen.

THE SCREW PROPELLER EXPERIMENTS ON THE "FLYING FISH."

The interesting and valuable experiments which have been going on for some time on H. M. S. *Flying Fish* (Commander Dew), which is about 900 tons measurement, and 350 nominal H. P., and constructed on beautiful lines, have now terminated. When first tried (May 13th), she had on a common screw of 11 ft. diameter, and 21 ft. 4 in. pitch, which gave her a speed of 11½ knots, with 82 revolutions of engines. This result not being considered satisfactory, such alterations were made as to get in a 13 ft. 2 in. screw, with 20 ft. pitch, which gave her a speed of fully 11½ knots, with 75 revolutions, and when reduced to half power (60 revolutions), 10 knots. The Lords of the Admiralty having ordered a Griffith's screw for her and the gun-boat *Bullfinch*, Mr. Griffith's requested to be allowed to supply these screws with an extra set of blades, constructed so as to incline at an angle of 18 degrees towards the ship, which could be shipped into the centre part of his screw, for trial, instead of the ordinary blades. This was acceded to, and these blades were first tried (July 24) with a pitch of 19 ft., the diameter, same as the common screw, 13·2, which gave a speed of 11¾ full, with only 71 revolutions. It was then perceived that by inclining the blades of the screw, it had considerably more hold on the water, and consequently reduced the slip. The pitch was afterwards reduced to 15 ft. (July 30), when a speed of nearly 12 knots was obtained, and with half power (60 revolutions), about 10 knots, the screw making a negative slip of about ¾ of a knot. It was then ordered by the Lords of the Admiralty that a temporary bow should be put to her of about 30 ft. long; and a trial was made (September 12) first with the common screw of 13·2 diameter, 20 ft. pitch, and a speed of full 12½ knots was obtained; and with half power (40 revolutions), 10 knots (the temporary bow giving the ship a knot more speed at full power, but no increase of speed at half power), on September 30. She was then tried with Griffith's screw of 13·2 in. diameter, and 19 ft. pitch, when a speed of nearly 13 knots was obtained. In consequence of an experiment that was tried on the *Bullfinch*, by reducing of Griffith's enclosed blades from 6 ft. to 5 ft. 4 in. diameter, and setting it at the same pitch as the common screw of 6 ft. diameter, which gave the vessel nearly half a knot more speed with the same amount of power, it was decided to try the same experiment on the *Flying Fish*. Her screw, with the enclosed blades, was reduced from 13·2 to 12 ft. and 20 ft. pitch (October 18), which gave her a speed of 12 knots, the engine only making 70 revolutions. The pitch was then reduced to 17 ft. (in October 22); engines then made only 75 revolutions, ship 12½ barely. She will be tried with the screw, with the enclosed blades reduced to 11 ft. diameter, and 20 ft. pitch; then reduce the pitch, so as to allow the engines to make 80 revolutions.—*London Art*

SHIPPING REVIEW.

FREIGHTS IN DECEMBER.—We continue our record from our last number for the closing of the month of November.

Nov. 26.—The supply of tonnage had increased, and a decline in freights became manifest, contrary to the anticipations of ship-owners. The chief decline was in breadstuffs to Great Britain. In other directions, no quotable change was reported. Engagements to Liverpool for corn and wheat were made at 8d. *a* 8½d. in bulk and ship's bags; flour, 2s. 3d.; cotton, 3-16d.; rosin, 2s. *a* 2s. 3d., closing at 2s; logwood, 26s. per ton. To London; grain, at 11d. *a* 11½d.; flour, 3s. To Hamburg, measurement goods by ship, 40c.; by steamer, 50s. *a* 60s. To Havre, by steamer, grain, 12d.; rosin, 3s. 6d.; cotton, ½c. Charters: ship Hussar, 800 tons, to Melbourne, at $10,500. A barque to Cadiz, wheat, 21c.; shipper's bags, and flour, 90c. A brig from Machias, Me., boards to Jamaica, $7 per M., and back to New-York, $5 per ton; a schooner, 165 tons, three voyages to Porto Rico and back, $1,300 each; a brig from Jacksonville to Philadelphia, flooring boards, $8,50; another, same cargo, to Baltimore, $8; one of three hundred tons, twelve months in Texas trade, $900 per month, all port charges paid.

At New-Orleans, Nov. 15.—Cotton to Liverpool at 15-32d.; grain, 8½d.; cotton to Havre, 1c.; cotton to Boston shipping quite freely at 9-16c. It was a noticeable fact, that there were nearly as many ships loading for Havre as for Liverpool. Coastwise freights dull.

At Savannah, Nov. 21.—Cotton to Liverpool, ½d., and timber, 45s.; cotton to New-York, ½c. by steamer, and 5-16c. by ship. To St. John, N. B., lumber, $12 per M. feet.

At Charleston, Nov. 21.—Cotton to Liverpool, ½d. to ½c.; Providence and Boston, ½c.

At Philadelphia, Nov. 22.—Shipowners were rather firm in their views. Grain to Liverpool, 10d.; flour, 2s. 6d. *a* 2s. 9d., and little doing. South American and West India freights dull. California rates, 30c. per foot; coal, $2 per ton to Boston.

At Boston, Nov. 22.—No improvement to California—27½c. per foot for measurement goods; $10 *a* $11 per ton for coal. To Australia, 25c. *a* 30c. for M. G., and $22,50 *a* $25 per M. for lumber. To Liverpool, freights were firm; heavy and measurement goods at 25s. *a* 30s. Charters: ship Dirigo, to Liberia, at $4,500; a ship out to Guayaquil, $10,000; a schr. from Wilmington to Boston, $8 per M. for re-sawed lumber; another from Jacksonville to Newburyport, $9 per M. for ditto; to southern parts, a fair amount of freight was offering; rates steady. To New-Orleans, 6c. per foot, 25c. *a* 30c. per bbl., and $3 per ton. To Mobile, 6½ c. *a* 7c. per foot, 30 and 35c. per barrel, and $3 per ton. To Charleston, Savannah and Richmond, same as to New-Orleans. To Baltimore by steamer, 8c. per foot.

Nov. 29.—The market to Great Britain continued to grow dull under the joint influence of a liberal supply of tonnage and diminished offerings, and lower rates were accepted. A new market has been found in Europe for American breadstuffs. Spain and Portugal, which have been formerly large exporters of wheat, are now coming to the United States for supplies. Several cargoes have been shipped to those countries during the past two or three months.

December 3.—The month opened with a decidedly dull market. Rates to Great Britain, especially for grain, were tending downward; vessels were becoming more numerous in port, and even the chartering business was participating in the general dullness. Some twelve or fifteen ships had been chartered by agents of the British and French governments in New-York and Boston, to load guano at the Chincha Islands, at £4 in the United Kingdom, and £4 5s. to ports in France; but even these rates, at this date, were above the limits

of the engaging parties. To Liverpool, grain at 7d. *a* 8d., and by a British vessel, 6½d.; flour, 2s. *a* 2s. 3d. To Glasgow, grain, 9d.; to London, 11d.; to Havre, 20c.; to California, 25c. *a* 27½c. for M. G.; coal, $12, and offerings light. Charters: a brig, 221 tons, Sierra Leone and back, $2,850; a schr., 220 tons, to Matanzas, $1,300; a barque, 340 tons, to Havana, $1,500; schr. from Jacksonville to New-York, square edge stuff, $8,50: one from Darien to New-York, hewn timber, $11, and boards for stowage, $8; a barque from Mobile to Philadelphia, cotton, ½c.; to Machias, Me., corn and flour, 5c. and 25c.; one to Bangor, and one to Belfast, at 4c. and 20c.

Dec. 6.—To Great Britain, rates continued to decline, the offerings having abated somewhat; in other directions, no change of importance had occurred. The supply of tonnage in port was still increasing, numbering 700 vessels in all. Small bottoms were comparatively scarce and in demand. The owners of large ships were despatching them to the Gulf, where, it was rumored, rates were advancing. Grain to Liverpool, at 6½d. *a* 7d., in bulk and ship's bags; flour, 2s.; oil cake, 23s. 6d.; saltpetre, 30s. per ton. To London, 10½d. for grain; for flour, 2s. 10½d. Charters: a ship to Montevideo and Buenos Ayres, lumber, $15; a barque to Spain, in Bay of Biscay, flour, $1,25; wheat, 28c. in shipper's bags; one of 2,700 bbls. to Malaga, Sicily, and back, $4,500; one 370 tons to Matanzas, $700; etc. It is customary to allow 5 per cent. *primage* additional to full charters made at *rates*. Quotations of freight, under these circumstances, will be so understood. When charters are made for a *round sum*, there is no primage; so, also, of charters to the West Indies and back, in which case, however, the port charges are usually paid.

A new staple has been discovered in the cotton-seed, hitherto an article in the south nearly worse than useless. A ship of 800 tons has been engaged to bring a full cargo to Providence, R. I., where the article is to be manufactured into oil and oil cakes. Similar manufactories are projected at Boston.

Dec. 13.—The market generally continued dull, and rates rule in favor of the shipper. The number of vessels in port, 667; small bottoms scarce. Engagements to Liverpool were made at still lower rates—5½d. *a* 6d. for grain in bulk, and 6d. *a* 6½d. in ship's bags; flour, 1s. 10½d. *a* 2s.; cotton, ½d. by the Africa; lard, 70s. To London, flour, 2s. 10d.; to Havre, flour, 70c.; grain, 20c.; heavy goods, $9. To Marseilles, rosin, $1; flour, 90c. To Bordeaux, grain, 22c. Charters: a barque hence to Montevideo and Buenos Ayres, $1,25 per bbl.; a brig and barque to Barcelona, grain, 22c. *a* 23c. in shipper's bags, and flour, $1; a barque to Cienfuegos and back, sugar, 40c., and molasses, $3; a schr., 178 tons, three voyages to Porto Rico and back, $1,400 each; a brig from Darien to New-York, timber, $11; a schr., 137 tons, to Attakapas and back, live oak timber, $1,500; a schr., 217 tons, to Brazos, $1,800.

At New-Orleans, Dec. 3.—Freight market active; engagements numerous at 9-16d. *a* ½d for cotton; for grain, 11d.; flour, 5s. to Liverpool; market closing firm.

At Philadelphia, Dec. 10.—Colliers in demand at $2,75 *a* $2,86 to Boston; $1,90 *a* $2 to Rhode Island, and $1,25 *a* $1,30 to New-York. But little offering to Liverpool; nothing to California; to foreign ports, rates unchanged.

At Boston, Dec. 10.—To California and Australia no change; business moderate. The ship Mary Goodell had been chartered to Callao and the Pacific at about $1,850 per month.

Dec. 17.—Freights to Great Britain are duller than ever, and rates are not done falling. In other directions the changes are not important, but the general business is exceedingly moderate. To Liverpool, lots have been taken at 5d. in bulk for corn and wheat, and at 5½d. in ship's bags; flour, 1s. 6d. by a British vessel; cotton, 5-16d. Charters: ship Osborn Howes, 1,100 tons, for San Francisco, $21,000; a ship from New-Orleans to Genoa, cotton, at 1½c.; a clipper ship at Boston from Richmond, 6,000 bbls. flour, to Sydney, N. S. W., $1,95, without primage. Other charters at rates similar to Dec. 13.

At New-Orleans, Dec. 6.—A slight advance was apparent; ⅜d. was paid for cotton to Liverpool, and 1⅛c. to Havre; to Boston, 11-16d. The scanty arrivals of ships, coupled with a rise in Western waters, had led to great firmness in the market. No change in rates at Savannah and Charleston.

At Baltimore, Dec. 13.—Freights were inactive, and previous rates were barely sustained. Grain to Liverpool, 9d.; flour, 3s. Charters: a brig to Rio Grande and return, $2,25 per bbl.; one for Rio Janeiro and return, $2 per bbl. and primage; to Havana with coal, $4 per ton. Southern trade dull.

At Philadelphia, Dec. 13.—Freights ruled dull. Colliers in demand and scarce.

At Boston, Dec. 13.—A fair amount offering to Australia at previous rates. No ships on the berth to Liverpool. Oil cake to London, 30s. per ton. Ice to Bombay at six rupees per ton. A ship with coal from Nova Scotia to San Juan del Sud, Pacific, at $18 per ton, including cost and freight; a ship from Calcutta to Boston, $14,50 per ton, and port charges; a barque from Calcutta, $14 per ton, and port charges. A very little change to Southern ports, and a fair amount offering. To New-Orleans, 6c. per foot, 25c. *a* 30c. per bbl., $3 per ton. To Mobile, 6c. *a* 7c. per foot, 30c. *a* 35c. per bbl., and $3 per ton. To Charleston, Savannah and Richmond, same rates per foot and bbl. as to New-Orleans.

Dec. 20.—The market opened easier, but reacted and closed at our previous quotations. The offerings of grain to Great Britain were materially abated, and a few ships were leaving for the South, seeking cotton freights. The ruling rates at the Gulf were reported at ⅜d. to Liverpool, and 1⅛c. to Havre. These figures define a very narrow margin for profits, after paying all expenses of a voyage, but they are considered preferable to the ruling grain rates at New-York. Owners are looking in all directions for employment, and some have resolved to lay up their vessels, and wait for better times. Wheat and corn to Liverpool at 4½d. *a* 5½d., closing nominally at 5½d *a* 6d.; flour, 1s. 6d. *a* 1s. 9d. To California, 25c. per foot. To Astoria and Portland, Oregon, direct, 37½ per foot. Charters: ship Lookout, 1,300 tons, to San Francisco, about $21,000. To Seville, grain, 25c. in shipper's bags; flour, $1. To New-Orleans, hay at $6 per ton. Pensacola to Baltimore, lumber, $9. At Philadelphia, no vessels on berth for San Francisco. Very little grain offering to Europe, and colliers scarce. At Boston, there was no change of previous rates in any direction; business moderate.

THE TRADE BETWEEN CHICAGO AND EUROPE.—The Canadian bark *Chieftain* has been chartered by parties in Chicago to go to Europe and back, from that port, early next season. She will take out wheat, and bring back salt or pig iron. The price agreed upon for the voyage, is $15,000; a penalty of $2,000 to be incurred in case of failure to carry out the contract. Other vessels are advertised for as wanted. One of them is desired to load for a port inside the Straits of Gibraltar, and not higher up than Valencia, with return cargo of fruit and wine, direct to Chicago. There should be a movement made towards enlarging the canals. It is reported from Liverpool that the *Dean Richmond* was sold for $13,000, and not $27,000, as first reported. It is also recommended that vessels from the Lakes, designed for sale in the United Kingdom, should have a standing keel, and not a *centre-board*, and be copper-fastened; without these qualifications, it will be impossible to get a fair character at Lloyds.

The total steam and sail-vessel tonnage built on the Western Lakes in 1854 was 30,784 tons. In 1855 there was added to the lake marine 37,427 tons. In the present year, the tonnage reported is 53,350. The cost of steam tonnage for the two years is estimated at $1,527,000, and of the sail-vessels at $2,817,750, making a total investment of $4,344,750.

SEAMEN AND WAGES.

Before November closed, seamen were more numerous and less difficult to engage for Liverpool, though it was by no means easy to complete crews for that port. To other ports they went quite willingly at our last month's quotations.

December 6th.—Reports show sailors to have become quite plenty, and advances declined in consequence. Wages unchanged. We quote :

			Wages.	Advance.
To Liverpool	per month,		$20	$30
" London	"	"	20	25
" Havre	"	"	20	25
" N. of Europe	"	"	20	25
" Mediterranean and South America	"	"	16	20
" West Indies	"	"	18	18
" East Indies and California	"	"	15	30
" Coasting	"	"	20	10

Dec. 13th.—Seamen continued in good supply, and advances became still easier to Havre, ($20 *a* $25), but remained unchanged in other directions. The extraordinary number of vessels in port is the chief cause of seamen becoming plenty ; when they leave port again, wages and advances will go up still further than ever.

December 20.—Sailors had become rather scarce again, without change in rates. Much has been said and written upon the scarcity of seamen. We think shipmasters will agree with us that to the Crimps and Sharks, and liquor boarding-houses, the shipping interest may charge most of the results of which ship-owners justly complain. If these evils could be removed, Jack would be found a very different man from what he now is. The system of advances has become immeasurably abused; very little of the advance money goes into the pocket of the sailor; it is nearly all appropriated by the Crimps and Sharks, who not only *set the wages and determine the proportion of advance money, but decide whether Jack shall or shall not go to sea.* These profligate leeches are getting to hold the shipping of this country in the hollow of their hands. An honest seaman fears them as they hate him. Shipping officers are not free from their corruptions, and they levy taxes right and left upon commerce.

Why not bring some legislative influence to bear through this channel upon the "Scarcity of Seamen?" It is corruption and degradation, more than any other causes, that have laid ship-owners under tribute to the Sailor's *Keeper* on shore—the foreign-born proprietor of a grog-shop, or brothel! Wipe out these nuisances, which stand as a barrier of stench across the path of a sailor's life, and seamen will increase with the wants of commerce. It is astonishing how few of our seamen are native born. From a report of the Secretary of State, to Congress, it appears that the whole number of American seamen registered in the United States, Oct. 1, 1856, was only 8,116, of whom 7,859 are natives, and only 257 are naturalized. In 1840, the number of native seamen was greater—7,951, but the naturalized portion less—140; total, 8,091. During 17 years, the number has not varied much, except in 1849, when it was 10,084, and in 1852, when it was 10,109. Maine and Massachusetts furnish *half* of our native seamen. The whole number of seamen now under the American flag, is about 400,000, and consequently, nearly all are unnaturalized foreigners.

Colored Seamen South.—The bill now under discussion in the Legislature of South Carolina allows colored seamen arriving at that port to remain on board, instead of being sent to jail as heretofore, the master of the vessel giving bonds that they shall obey the laws of the State. In case the law is violated, or the seaman is found beyond his vessel, the bonds are forfeited, and the Act of 1835 resumes its full force, as it respects offending parties. This bill has become a law.

SALES AND PRICES OF SHIPS.

Ship Hampden, 646 tons, for $12,000.
Ship Rufus Choate, new, 1000 tons, for $55,000.
Barque Kremlin, 470 tons, for $23,000.
Ship Winged Racer, Clipper, 1768 tons, terms private.
Ship Ocean Herald, sold at Marseilles, for £13,000.
Barque J. Walls, Jr., at auction, for $4,400.
Barque John Gilpin, of Boston, 4 years old, $12,000, cash.
Barque Lenox " " for $11,000.

NEW SHIPS ON THE STOCKS FOR SALE.

At Chelsea, Jotham Stetson has a ship of 1100 tons, well advanced.

There are few vessels now on the stocks for market, and we trust builders will give us notice of all such with some particulars.

SHIP-BUILDING IN MAINE.

A New-York Marine Inspector has visited the East, and reports that the general character of shipping built the past year in Maine, is greatly improved. Being practically acquainted with the practice of ship-building in this great marine State, we think we can account for the Inspector's remark on another hypothesis; it is this: that this was his first visit to the ship-yards of Maine, and his prejudices were, for the first time, in some measure, removed by actual observation on Maine ship-building in various stages of progress in the yards. The majority of ships built in Maine were always better constructed than New-York Inspectors supposed, notwithstanding the abortive workmanship which may have fallen under their vision from time to time. We have seen bad work done in every part of the country, and know that New-York can, of right, claim her full share of credits and discredits. New-York ship-building is never inspected in Maine, and we know that as good work is done "Down East," *for the price*, as can be done elsewhere.

A correct and faithful marine inspection, such as has been rarely applied in New-York, to the great loss of every shipping interest, will bring the ship-building of all parts of the country within the proper pale. We trust some improvement is destined to be introduced in the survey and classification of shipping, itself, that will be creditable to this great marine country.

The clipper model has been almost entirely discarded in Eastern ship-building the past season; on the contrary, the opposite extreme has been taken in the design, and ships have been built *full*, and dimensioned with a view to great capacity and diminished tonnage. When will our land-lubber law of admeasurement for shipping receive any modification or improvement? Full ships cannot be made as strong as those of medium sharpness, if we consider the difference in cargo, the scantling being the same; and disproportioned, ill-shapen ships, made so to avoid full measurement, cannot be navigated so safely as ships designed solely with reference to their legitimate uses. It is estimated that at least 100 large ships, averaging 1000 tons each, in addition to fifty of the smaller size, have been built in Maine the past season. The prospects for the ensuing year are regarded as unfavorable, the market being pressed and freighting dull.

In New-York.—Ship-building is now in a half dormant state. The number now on the stocks is only sixteen ; aggregate tonnage, 13,000, being two-fifths less tonnage than was building at the close of last year. No immediate improvement can be foreseen. The number built in 1856 is about fifty-six ; tonnage, 42,470 tons.

Steamers, 15; other steam vessels, 5; ships, 11; barques, 12 ; schooners, &c., 13. The amount of tonnage launched in 1855, was 30,000, showing an increase in 1856, notwithstanding the present dullness.

Wages may be set down as at $2,00 per day; along shore $2,50; jobbing is very dull.

IN LOUISVILLE, KENTUCKY.—Thirty-six new steamboats have been built the past year, at a cost of $1,021,000. Louisville is a famous place for steamboat building, on the Ohio river. The total number of boats inspected within the last year was sixty-five, with an aggregate tonnage of 24,861 tons. The largest boats have been built at New-Albany, Indiana.

IN KEY WEST, FLORIDA.—The clipper ship S. R. Mallory, Capt. Lester, is the first ship built in southern waters. She has just sailed from Charleston for Liverpool, with cotton. She is said to be beautifully modelled, of first class construction. Her wooden materials consist almost entirely of oak, cedar, and mahogany. The sails were made in New-York, but in all other respects, the Mallory is a Key West ship.

IN MEDFORD, MASS.—A short time since there was but one ship on the stocks.

IN CALAIS, ME.—There are no vessels building, and but one in Robinston. Both of these places were once famous for ship-building.

IN BUFFALO, N. Y.—In addition to vessels previously laid on the stocks, five propellers have recently been contracted for. In Buffalo and Cleaveland ship-building will be rather brisk during the coming winter.

IN QUEBEC.—About 25 new keels are laid. The number of ships built during the past 12 months is 42—tonnage, 32,235. There are now upon the stocks, approaching completion, 37 vessels—tonnage, 27,115. In these close times, great economy is practiced in the use of first-class materials. At Quebec, where the observance of Lloyd's Rules is exacted by faithful Inspectors, as good ships are now built as would be if "times" were better. When will a similar system be applied in the United States?

LAUNCHES.

At Bangor, Me., November 19th, a barque of 447 tons, West India trade.
At Searsport, Me., November 18th, a barque of 400 tons.
At " " " 12th, barque Investigator, of 600 tons.
At Belfast, " " 13th, by Messrs. Carter & Co., ship Seaman's Bride, of 750 tons.
At Waldoboro, Me., " 12th, by J. Clark & Son, ship Joseph Clark, of 1200 tons.
At Rockland, Me., " 18th, barque Harriet A. Fiske, of 525 tons.
At Harrington, Me., " 12th, by O. S. Plummer, Esq., schr. Argus, of 140 tons, Southern lumber trade.
At Brooklyn, N. Y., November 22nd, by Messrs. Webb & Bell, barque Jane Daggett, of 850 tons.
At New-York, November 24th, by Thomas Collier, Esq., steamship Yang Tse, of 1100 tons, China tea trade.
At Newport, Rhode Island, November 15th, a brig of 260 tons, not yet named, and for sale.
At Boston, November 26th, by Daniel Kelley, Esq., a ship of 1100 tons, is for sale.
At Brooksville, Me., November 22nd, by Messrs. Watson & Co., a barque of 320 tons.
At Greenpoint, L. I., November 27th, by Wm. Collyer, steamship Columbia, of 1800 tons, for Messrs. Spofford, Tilleston & Co.'s line of Charleston Packets, under the command of Capt. M. Berry.
At Millbridge, November 16th, by E. Dyer, Esq., barque Mary C. Dyer, of 360 tons.
At Prospect, Me., November 12th, N. G. Hichborn, ship E. Sherman, of 700 tons.
At Port Jefferson, Long Island, November 29th, barque Clara R. Sutil, of 325 tons, South American trade.
At Wiscasset, Me., November 29th, by Messrs. Johnson, ship Wallace, of 980 tons.
At Providence, Rhode Island, November 27th, by Messrs. McLeod & Salisbury, brig Ida Leod, of —— tons.
At Columbia, Me., Nov. 13th, a fine brig of 280 tons.
At Cherryfield, Me., Nov. 13th, barque Osprey, of —— tons.
At Freeport, Me., Dec. 9th, by Messrs. Briggs, Means & Cushing, a fine freighting ship, of 750 tons, a large carrier, and is for sale.
At Freeport, Me., Dec. 11th, by David Brewster, Esq., ship Kentuckian, of 1100 tons.
At Cumberland, Me., Dec. 12th, by D. Spencer, Esq., barque Arizona, of 583 tons, is for sale.
At Bath, Maine, Dec. 12th, by Messrs. Larrabbe & Moses, ship Oliver Moses, of tons.
At Bath, Me., ship Union, of 1000 tons.
At Robinston, Me., Dec. 8th, by J. N. M. Brewer, Esq., ship Henrietta, of 673 tons.
At Savannah, Geo., Dec., by Samuel N. Papot, Esq., steamer Goliah, —— tons. She is the old hull of the steamer Seminole, which was burnt at Jacksonville.

DISASTERS AT SEA.

STEAMERS.

Doris, (Canadian), Quebec, was lost in the Straits of Belle Isle, October 25th.

SHIPS.

Celia, which went ashore at Dover, Eng., will be a total loss.
North Star, (whaler), was totally lost on the north coast of New Holland, July 12th.
Col. Cutts, Cardiff, for New-Orleans, was abandoned in a sinking condition, October 18th.
Julia Howard, Boston, for New-Orleans, was lost on Ginger Bread Shoals, Bahama, November 6th.
Snow Squall, New-York, for San Francisco, put into Montevideo in distress, September 15th.
Samuel M. Fox, Liverpool, for New-York, was totally lost, November 12th.
Silas Wright, Liverpool, for New-York, was totally lost, November 12th.
Louisiana, Liverpool, for New-Orleans, was totally lost, November 12th.
Troy, New-York, for Glasgow, struck on Diamond Reef, November 28th, and sunk in the mud.
Medomak, Rangoon, for Antwerp, is ashore near Flushing, and will be a total loss.
Gen. Dunlap, New-Orleans, for Alicanti, Spain, was wrecked near Catalan Bay, November 15th.
Transport, Sunderland, for New-York, was abandoned in a sinking condition, November 15th.
Wild Duck, ashore on Hokianga Bank, river Min; it is supposed that she got assistance from Foo-chow-foo, about 20 miles distant.
Mastiff, at Callao, from San Francisco, lost spars, sails and rigging on the passage.
St. Louis, ashore near Liverpool, will be a total loss.
Alexander Coffin, (whaler), of New-Bedford, has been lost in the Ochotsk Sea, (no date).
B. F. Hoxie, at San Francisco, lost sails, &c.
New-York, Liverpool, for New-York, is ashore near Barnegat, full of water, December 21st.
Unknown, was lost November 13th, at the entrance of the Willingen.
Neptune, New-Orleans, for Liverpool, put into Key West in distress, November 26th.

BARQUES.

Three Brothers, was driven ashore at Buenos Ayres, October 1st, and became a total loss.
Meni, at New-York, from Malaga, was much damaged, November 22d.
M. E. Trout, at New-York, from Cadiz, lost spars, sails, &c.
Damantee, (Sp), Malaga, for Charleston, went ashore near Capers Island, November 18th.
Topeka, at Providence, R. I., from Glasgow, is much damaged.
J. Cunard, (Br.), for St. Johns, N. B., was totally lost near Moosepecca, Me., December ——.
Braman, New-York, for Lisbon, put into St. Michaels in distress, October 20th.
Mercury, (whaler), on the 13th of May sustained considerable damage near Bonin Islands, and put into Honolulu for repairs.
John Caskie, Penang, for New-York, put into Barbadoes in distress, Nov. 11th.
Mary Melville, put into Pernambuco in distress, October 30th.
Llewellyn, for River La Platte, was abandoned a complete wreck, October 12th.

BRIGS.

Ciudad Boliver, Alexandria, Va, for Barbadoes, was abandoned, November 17th.
Pamako, New-Haven, Connecticut, for Porto Rico, was burned in Gardiner's Bay, L. I., November 22d.
Mazatlan, Charleston, S. C., for Mobile, was lost on Chandeleur Island, November 17th.
Maine, Franklin, La, for Portsmouth, N. H., was abandoned in a sinking condition, October 16th.
Tarry Not, Georgetown, S. C., for St. Johns, N. B., was abandoned in a sinking condition, December 5th.
Charles A. Coe, New-York, for St. Marks, was wrecked on the Bahama Banks, near Abaco, November 21st.
Aurora, Charleston, for Havana, was wrecked at Abaco, November 15th.
Talavera, Alexandria, Va, for Liverpool, put into Portland, Me., in distress, December 12th.
Melazzo, Georgetown, S. C., for Barbadoes, put into Charleston, S. C., leaky, &c., December 9th.
Mississippi, was reported at St. Thomas to have been totally lost on Annagada Reef.
Iris, (Br.), for St. Johns, N. B., was abandoned, water-logged, October 19th.
Spes, (Swedish), Rio Janeiro, for New-York, was brought into latter port in distress, December 14th, by Pilot Boat G. W. Blunt, November 11th.
Tarquina, (whaler), was lost in the Ochotsk Sea, (no date.)
Agate, (whaler), was lost near St. Paul's Island, Kamschatka Sea, (no date.)
Jane, (Br.), is reported to have been lost on the Mille Vaches Shoals, November 26th.
Durham, (Br.), St. Domingo, for Gibraltar, put into Bermuda, dismasted, November 20th.
St. Michael, (Dan.), St. Domingo for Boston, put into Holmes' Hole, with loss of sails, &c., December 19th.

Odd Fellow, (Br.), Port-au-Prince, for Boston, was wrecked on the North Caicos, November 29th.
Flying Cloud, Philadelphia, for Charlestown, Mass., was wrecked near Mantauk, December 14th.
Almira, Georgetown, S. C., for Thomaston, Me., put into Newport in distress, December 16th.
Caribee, Savannah, for Bath, Me., was abandoned full of water, and dismasted, December 11th.

SCHOONERS.

Rattlesnake, for Norfolk, Va., was wrecked near Cape Henlopen, November 21st.
Curlew, capsized off Cape Ann, December 1st.
Brazos, New-Orleans, for Belize, was wrecked near latter port, October 20th.
Montezuma, was wrecked on Duck Island, Isle of Shoals, November 29th.
Fanny Crocker, was totally lost near Saybrook, Conn., December 2nd, (4 lives lost).
Nancy Ann, for Portland, Me., was abandoned in a sinking condition, December 7th.
Washington, for Boston, was lost on Cow Ledge, Bryer's Island, December 3d.
Rover, (Br.), Nassau, N. P., New-York, put into Charleston, in distress, December 8th.
Mary, for Boston, was abandoned, water-logged, December 5th.
H. W. Godfrey, for New-York, was abandoned in a sinking condition, December 8th.
J. W. Hale, at New-York, lost spars, &c.
Charles Hill, Norfolk, for Porto Rico, put into Charleston, December 9th.
Ossuna, Georgetown, S. C., for Boston, put into Norfolk in distress, December 12th.
Example, went ashore near Guilford, December 11th.
W. H. Spear, Wilmington, N. C., for Boston, was abandoned in a sinking condition, December 9th.
William S. Brown, Port-au-Prince, for New-York, was lost on Conception Island, December 1st.
Anna Jenkins, went ashore on Barnegat Shoals, December 15th, (is a total loss).

SAFETY-VALVE SPRINGS.

THE English engineers, and the public generally, have a lively fancy for locking up safety-valves, so that they cannot be tampered with. A Mr. Humphrey, of Brighton, some years ago, patented a device to prevent the engineer from increasing the pressure. His plan consisted in his applying a spring to the short end of the lever, which spring would yield at the same pressure usually put upon the lock-up valve. The device is better than the lock-up; because, when the valve is used at the discretion of the engineer, and kept at a lower pressure than the other, which is locked up, there is sometimes an adhesion that becomes dangerous; but a valve that is always in use is much less likely to stick. But the whole subject of springs for safety-valves is very imperfectly developed.

The ordinary springs have not sufficient power. A spring should yield enough to give full room to blow, without much increasing the pressure. If a valve has an opening of three inches diameter, its spring should allow a lift of three-quarters of an inch, without increasing the strain more than ten pounds per inch. Instead of the small spiral, with its long lever, a long elliptical spring, acting directly, should be used,—one that would bend six inches or more; and to *lift* the valve, a lever might be used; but a lever to *hold down* the valve, with a spring of little weight, is a perpetual source of danger; because, in an emergency it cannot yield enough to let off all the steam that is generated, until the pressure rises high enough to burst the boiler. A spring for a three inch valve should weigh at least fifty pounds, to have an easy and long action, and do as well as a weight.

[*Halley's Rail-Road Advocate.*

MARINER'S JOURNAL.

PHILADELPHIA, *December* 10, 1856.

Messrs. GRIFFITHS & BATES,

Editors U. S. Nautical Magazine and Naval Journal:

GENTLEMEN :—According to your invitation, page 240, December No. of your Magazine, I give you a few remarks on the Sweating (so called) of ships.

Two years ago I was in New-Orleans seekihg freight. I noticed in advertisements of ships for cotton, "*this ship takes no grain!*" I thought this very strange, in an expensive port like New-Orleans. A shipmaster preferred to buy ballast at a high price, and have to pay for taking it out in Liverpool, to ballasting his ship with grain, upon which the ship would be paid a better freight than on the cotton, as the expenses of towing are so much less. I was told that the grain sweat and damaged the cotton. I saw through this mistake at once, and determined I would ballast my ship with grain, and convince cotton shippers that there would be no fear of damaging the cotton thereby. This sweating is easily accounted for. It has been much complained of in clipper ships, but they are not more liable to sweat than any other. Clipper ships are mostly chartered for long voyages, such as to California, India, &c., and it is on these long voyages that the sweating takes place to a much greater extent than on any other. All modern built ships are ventilated as much as possible. Their ventilators are opened in fine weather, particularly in passing through the tropics; the warm atmosphere passes into the between decks and lower hold, where the wood of the ship, and the cargo, are many degrees colder; the moisture of the air condenses and forms what sailors call "sweat;" this is continually going on, and accumulates so fast, that it falls down like rain from the under part of the deck upon the cargo, and will damage it as much as if exposed to rain. On a long voyage this condensation will amount to tons. Go into a garden on a summer's morning before sunrise, and witness the result of this condensation of the moisture of the warm air on the plants, in form of dew. It is the same precisely in the case of a pitcher with ice in it; the cold pitcher condenses the moisture of the surrounding atmosphere upon its outer surface.

This can be easily avoided in ships with general cargoes of merchandize which require no ventilation. Keep the ventilators closed tight during the voyage, so as to preserve a uniform temperature in the hold of the ship, and there will be no sweating. If necessary to open the hatches on the voyage to get up stores, they should be closed again immediately. Ships carrying emigrants, or perishable cargoes, such as fruit, vegetables, &c., require ventilation, but not grain, flour, cotton, &c., &c.

Respectfully yours, E. DUNN.

We shall be glad to hear from any of our readers in relation to their experience in the "sweating" of ships, and will reserve our own views for subsequent publication. Captain Dunn's hypothesis appears philosophical, and we think there is much yet to be learned in relation to the proper ventilation of ships and cargoes.

A NEW PLAN FOR REEFING TOPSAILS.—Mr. Boss, of New-York, has recently secured a patent for reducing and reefing topsails. The plan is very simple. Four legs, or a crow's-foot, are spread along the foot of the sail and secured to it, two on each side of amidships, and are sewed to the sail up to the close-reef band, where they terminate in eyes. To these eyes four ropes are bent, which reve through fairleaders on the yard, and thence through blocks, at the mast-head, to the deck. When the sail is required to be reefed, these ropes are hauled taut, the topsail halliards let go, and the sail

is brought bodily up to the yard and confined there. The slack of the reef-tackles is then hauled in, and the sail is almost as snug as if it were close-reefed. The work of hauling out the earings, and knotting the points, is then comparatively easy. This plan, it is thought, will do away with double topsail yards.

The Shipping Interest.—One of the most remarkable illustrations of our progress as a nation is to be found in the rapid and unparalleled increase of our mercantile marine. Our tonnage already exceeds that of any other nation, and at the ratio of increase during the last fifteen years, we may, at no very distant period, boast of more shipping than England and France combined. To make this advancement, however, we must establish more steam lines, and increase our business with all parts of the world. Let us glance at the progress of the mercantile marine of this country and of the world. No longer ago than 1830, the tonnage of American vessels, according to the N. Y. *Shipping List*, was 1,191,776 tons; the number of seamen and watermen under the American flag, including those in the Navy, a little over 90,000. In 1855 the tonnage had increased to 5,212,000 tons, and the number of seamen to nearly 400,000, both more than quadrupled in one-fourth of a century. In 1814 the tonnage of the British commercial marine was 2,616,965 tons, employing 172,786 men and boys. In 1854, forty years afterwards, the tonnage had increased to 5,043,270, and her seamen, including the 62,000 in her Navy, to nearly 400,000, both having doubled in less than half a century. The commerce, tonnage and seamen of the world, have much more than doubled during the last forty years. Everything indicates a more rapid increase in the future. The century shall not end ere the 150,000 vessels of the civilized world shall have become 300,000, with swifter wings and stronger power to do the bidding of the commerce, and their 15,000,000 of tonnage shall have become 30,000,000, and their million and a half of seamen shall have become three millions—a number of men larger than the whole nation three-quarters of a century since—larger than the whole Anglo Saxon race two centuries ago.

Preventing Collisions at Sea.—Captain West, of the new Collins' steamer Adriatic, has adopted a new method to prevent collisions at sea. Heretofore lights have been displayed on vessels at sea to tell their whereabouts; but Captain West has reversed the old-fashioned method by the introduction of a powerful Calcium light, which is to be placed in the top of the forward wheel-house, so that he can see in every direction at a distance of ten miles. Instead of depending upon others to see him, to avoid a collision at sea, he intends to keep a sharp look-out himself. This improvement should be adopted on all our steam vessels carrying passenger if, indeed, it is not equally worthy of introduction generally. The *Scient American* is of the opinion that if all vessels were compelled to carry a use visual and auricular signals, in nights and in fogs, collisions at

might be completely prevented, and urges the adoption of light signals by all vessels navigating the ocean; also the use of steam whistles, when practicable. On sailing vessels, an air whistle operated by hand, like a pump, could be used, and it could be constructed to send forth its screams to a distance of some miles.

The British Board of trade have presented to Parliament the register of wrecks for 1855. The whole number of vessels wrecked on the coasts of the United Kingdom, last year, was 1141, representing a burden of 176,544 tons; 963 being British, 11 colonial, and 116 foreign; and of these, 272 were totally lost, and 247 were accidents by collision. The places where the shipwrecks occurred, were, 576 on the east coast, 251 on the west coast, 117 on the south coast of Great Britain, and 127 on the Irish coast. Of the whole number of vessels wrecked or damaged—

541 were under 100 tons.
496 were over 100 and not exceeding 300 tons.
67 " 300 " 600 tons.
27 " 600 " 900 tons.
4 " 900 " 1200 tons.
6 " 1200 and upwards.
34 of the number were steam vessels.

The number of lives saved is an interesting feature of this report. Last year 1,888 were saved from wrecked vessels. The number lost was 459. In 1854 the total number of lives lost was 1,549; in 1853, 689; in 1852, 920.

The number of collisions reported is greatly on the increase, being 247 against 94 registered in 1854, 73 in 1853, and 57 in 1852.

These frequent collisions, it is stated, arise in a great measure from the hampering of vessels' upper decks with cabins and other constructions which shut out from the view of the helmsman the object ahead of his ship. The want of a well understood signal of distress in the cases of collisions is a *desideratum*.

CHILIAN SHIPPING.—The national navy of Chili consists of the corvette Constitution, brigantines Ancud and Meteoro, the schooner Janequero, and the store ship Chili. A steam corvette of 20 guns and 200 horse power, called the Esmeralda, is being built in England, at a cost of $240,000, and a small steamer, called the Maule, has already sailed from New-York, to be used as a tug boat at Constitution.

The mercantile marine at the present time consists of 265 vessels, of an aggregate of 62,005 tons, manned by 2,824 seamen. In 1843 it only numbered 105 vessels, of 12,628 tons.

THE BRITISH NAVY.—There were in commission on the 1st of November, 264 British ships of war, mounting 5,037 guns, and manned by 49,644 men; but of these, 24 ships, mounting 425 guns, and manned by 4,218 men, had

been ordered home, leaving in commission 240 ships, 4,612 guns, and 45,426 men. These figures show that since the ratification of the peace a reduction has taken place equal to 61 sail, 1,194 guns, and 13,691 men. The largest fleet in commission is in the Mediterranean, numbering 48 ships, 947 guns, and 10,728 men. The next largest is on the North American and West Indian station, numbering 28 ships, 562 guns, and 5,940 men. The next is the East Indian fleet, comprising 27 ships, 389 guns, and 4,098 men. On the south-east coast of America there are 8 ships, 121 guns, and 1,352 men, and on the west coast of America, 10 ships, 266 guns, and 2,587 men.

VOYAGE OF A BOTTLE.—*Aransas, (Texas), October* 25, 1856.—Sir:—The enclosed memorandum came ashore on the Gulf beach yesterday about noon, in a wine bottle. It landed some six or seven miles north-east of the light-house at this pass; wind at the time south-east. Supposing it might be of interest to you, I take the liberty of forwarding it with my respects. Yours, etc.,

D. M. HASTINGS, *Postmaster.*

LIEUT. MAURY, National Observatory, Washington.

"Ship Admiral, for London, Samuel Pistren, Commander. On the equator, long. 30 deg. 45 min. west. Sixty-five days out from Melbourne. All well.
February 17, 1856."

This bottle was afloat 252 days, and performed a voyage measuring, according to the shortest route, a distance of at least 4,950 statute miles. This is another illustration of the fact that the Amazon, as well as the Mississippi, casts its drift into the Gulf of Mexico. This bottle passed the offing of the Amazon on its way, traveled across the Caribbean Sea, and the Gulf of Mexico by the Yucatan Pass.

STEAM FOR RAISING SHIPS.—France seems to be a long distance behind America and England in the use of steam power for raising great bodies in the dock-yards. At the Imperial dock-yard at Cherbourg they still raise the vessels on the stocks for repairs by capstan and hand labor. . A short time since a line-of-battle-ship was raised for repairs, and no less than 700 men, manning six capstans, were employed for several hours to accomplish this work. By the use of a steam engine of 70 horse power, the same work could have been performed, with only a few attendants, in four hours.—*Scientific American.*

THE COMPASS ON IRON SHIPS.—Dr. Scoresby, of England, celebrated for his scientific attainments, recently undertook a voyage to Australia, for the purpose of making experiments with compasses on iron vessels, in order, if possible, to discover some means of preventing local attraction. In writing from Australia, after accomplishing his voyage out, he says: "The only way to keep the compasses from being influenced by the iron of the vessel is to elevate it above the reach of its influence on the mast." He also says: "If the return voyage shall prove as satisfactory as the one out, the principal risk in the navigation of iron ships may be considered overcome."

THE CLIPPER RACES.—The race among the clippers from China to England, with the first cargo of tea for the present season, has been won by the American clipper *Maury*. She carried a cargo of 600 tons of tea.

CAUTION TO LAKE CAPTAINS AND VESSEL OWNERS.—The Collector at Buffalo, a few days ago, imposed a fine of $50 on the master of the *Evergreen City*, for leaving Chicago without a clearance. It has become a matter of common complaint, that vessels arriving at this port have neglected to comply with even the spirit of the law in their reports to the custom-house. Sometimes about half the cargo is reported with no consignees, sometimes no report is made at all until after several days, and then again we have reports of a hundred different articles, all jumbled up together, without any possibility of arriving at the true facts of the case.

MARINE DECISIONS OF THE ATTORNEY-GENERAL OF THE UNITED STATES, OCT. 28, 1856.—1. Shipmasters in foreign ports are subject to the requisition of the consul to take on board and carry to the United States distressed mariners, but not seamen or other persons accused of crimes, and to be transported to the United States for prosecution.

2. Officers and crews of the public ships of the United States are not entitled to salvage, civil or military, as of complete legal right. The allowance of salvage, civil or military, in such cases, like the allowance of prize money on captures, is against public policy, and ought to be abolished in the sea service, as it was long ago in the land service.

3. There is punishment by statute for the act of a shipmaster in unlawfully putting a seamen on shore in a foreign port; but not for an assault on a seaman on board ship or otherwise in a foreign port.

LEGAL SPONGING.—Perhaps it is not generally known that gratuitous fees, or bonuses, are levied upon shipmasters in New-York, by some of the officers of the State, in cases like the following: A case of complaint made by a shipmaster in October, 1855, against his crew for disorderly conduct at sea, including all kinds of bad conduct, except mutiny, was tried before Judge Betts, in behalf of the United States, and the defendants found guilty on all the charges. The captain was a witness. After the trial was concluded, the deputy marshal officiating on the occasion, called the captain aside, and remarked that it was *customary* on such occasions to receive a reward from shipmasters for the summary dispatch of their duties in the premises, and offered his congratulations on the *justice* which had been done in the conviction of the guilty crew, adding, that he, the officer of justice, desired to be called upon again, if another occasion offered, when he would be most happy to do up his part in satisfactory style. The captain demurred to paying bonuses where he had no pecuniary interests at stake, but added, that if it was *customary*, he was far above being *niggardly*, and taking the amount paid him by the State for witness fees, which was $9, he added $1 to the pile, and presented Mr. Deputy Marshal with $10. What next?

NOTICES TO MARINERS.

Light-house at Aransas Pass, Texas.—A light-house has recently been erected at Aransas Pass, upon Low Island, the approximate position of which is as follows: Latitude, 27 deg. 54 min. N. Longitude, 97 deg. 3 min. 54 sec. West of Greenwich. The tower is octagonal, and is painted dark brick color. It is 55 feet in height to the deck of the lantern. The illuminating apparatus is a fourth order Fresnel lens, showing a *fixed white light* at an elevation of 59½ feet above the level of the sea, and which, under ordinary states of the atmosphere, should be seen from the deck of a vessel, at a distance of about 13 nautical miles. The light will be exhibited for the first time on or about the evening of the 1st of January, 1857, of which, however, due public notice will be given. The light when bearing N. W. ½ W. will show between the two points of the Pass, but the bar shifts so often that no directions can be given for crossing without a pilot.

By order of the Light-house Board.

Galveston, Texas, October 29, 1856.

North-east Pass Light-house, Mouth of the Mississippi River.—On and after the 31st day of December next, the light on Frank's Island, at the North-east Pass of the Mississippi River, will be discontinued. The tower, 70 feet in height, painted white, will be left standing to serve as a day mark for mariners.

Wing Lights at the S. W. Pass Light-house.—At the same time, the two wing lights at the S. W. Pass Light-house will be extinguished, as not being necessary for distinction, after the discontinuance of the N. E. Pass light.

Lights at the Mouth of the Mississippi River.—After the 31st December, and the above named changes shall have been made, the lights to mark the several passes of the Mississippi will be as follows, viz: S. W. Pass light, on the west side of, and near the entrance to the Pass, a fixed white light, in a white tower, having an elevation of 70 feet above the mean level of the sea. South Pass, on Gordon's Island, near the entrance to the Pass, a revolving white light, showing a *brilliant flash* once in every 1 min. 15 sec. from a slate colored wooden tower on the keeper's house, 60 feet above the mean level of the sea; and Pass a L'Outre light, on Middle Ground Island, north side of the entrance to Pass a L'Outre, a fixed white light, varied by flashes, exhibited from a black tower, at an elevation of 77 feet above the mean level of the sea.

By order of the Light-house Board.

Washington, D. C., November 24, 1856.

Light-house in the Weser, on the Hohe Weg Plat.—Chancery of the Senate, Bremen, Nov. 10. Notice is hereby given, that in place of the wooden Bremen Beacon, situated in 53 deg. 42 min. 51 sec. North latitude, and 8 deg. 14 min. 52 sec. East longitude from Greenwich, a light-house has been erected. It is built of bricks, and at the base surrounded with sloping masonry of stone. This light-house is of an octagonal form, and at the elevation of 34 feet above ordinary high water mark, is surrounded by a terrace with an iron railing.

The light is catadioptric, according to Fresnel's system of the second order; it is 107 feet above high water at ordinary tides, and is a fixed white light. In clear weather it will be visible at the distance of 15 or 16 nautical miles, and may, therefore, be seen from the first or outer buoy, called the "Key Buoy." The light will be visible within all points of the compass from S. round by E. to N. W. by W. From the outer light vessel the light-house bears S. by E. ½ E., and from the light-house the church of Langwarden bears South. The light will be first lit on the 1st of December next, and will continue to burn every night from sunset to sunrise; and from that day the inner light vessel will be removed from her station. For the convenience of mariners entering the Weser, but by means to induce them to neglect the use of the lead, a small white light will be shown from the light-house at an elevation of 38 feet above ordinary high water mark, and which in clear weather will be visible at the distance of 7 nautical miles. This light will disappear to those who are approaching too much the black buoy (or starboard) side, near buoys H. and J. To those entering the Dwasgat, it will assume a reddish color in a line with the red buoy, and will disappear when they reach the line of the black W. A. buoy. This smaller light will be visible between the bearings of N. by W. ¾ W. round N. to E. by S.

Nayat Point Light-house.—Entrance of Providence River, Rhode Island.—A new brick tower, with cleaning room attached, has been erected at Nayat Point, entrance of Pro[illegible] River, to take the place of the old tower and light, which will be removed. The ne[illegible] located 65 feet to the E. of N. from the old one. It is whitewashed, and its base is 1[illegible] low tide. Its height is 31 feet from the base to the light, and the centre of the new [illegible] 45 feet above low water. A fixed white light of the 4th order of Fresnel will be [illegible] the new tower on and after December 25, 1856, which, in ordinary states of the atm[illegible] be seen from a vessel's deck, 10 feet above the water, at a distance of 11 nautical [illegible]

By order of the Light-house Board.

Light-house Engineer's Office,

Newport, R. I., December 2, 1856.

Black Sea.—Official information has been received at the office of the Light-house Board, that the Director of Lights for the Turkish Government has recently issued the following notices:

Fixed Light at the Sulina.—On and after the 15th day of September last, the harbor light provisionally exhibited at the entrance of the Sulina, or Middle branch of the Danube, would be replaced by a coast light of greater power. The new light is a fixed light of the second order. It is said to be placed at an elevation of 65 feet above the level of the sea, and should be visible from the deck of a ship in clear weather at a distance of 15 miles. The light tower is of stone, circular, and colored white. It stands on the south side of the entrance, in latitude 45 deg. 9 min. N., longitude 29 deg. 41 min. east of Greenwich.

Revolving Light on Fidonisi.—On and after the 15th day of October last, the harbor light provisionally exhibited upon Fidonisi, or Serpents' Isle, off the mouths of the Danube, would be replaced by a coast light of greater power. The new light is revolving, showing a bright face every half minute. It stands at a height of 195 feet above the level of the sea, and should be visible from the deck of a ship at a distance of 18 miles. In clear weather, the eclipses will not be total to an observer when within eight miles of the light. The light-house is a wooden structure 70 feet in height from base to vane, and is placed on the summit of the isle, in latitude 45 deg. 15 min. 30 sec. N., longitude 30 deg. 14 min. 54 sec. east of Greenwich.

Red Lights at Kum Kaleh—Dardanelles.—On and after the 15th day of September last, two red lights would be established at Kum Kaleh, in the western battery of the First or New Castle of Asia, on the south side of the entrance to the Dardanelles. The lights are placed in line one above the other, the elevation of the upper light being 50 feet above the level of the sea. At a distance of 1¼ miles, the two lights will combine and form one light, the range of which will be about 4 miles.

Washington, D. C., Nov. 24, 1856.

North Atlantic, Newfoundland.—Fixed Light on Cape Race.—[This notice differs somewhat from the notices published at an earlier period.]

The Lords of the Committee of Privy Council for Trade have given notice, that on and after the 15th day of December next, a light will be established in the light-house recently erected on Cape Race, at the south eastern extreme of Newfoundland. The light will be a fixed light of the natural color. The illuminating apparatus catadioptric or by reflectors. The centre of the light will be elevated 180 feet above the mean level of the sea, and could be seen from a ship's deck in clear weather at a distance of 17 miles, from N. E. by N. round by the S. E. and S. to W. The light tower is a circular structure of iron, and rises from the centre of the keeper's dwelling. It is 50 feet in height from base to vane, and is painted in red and white vertical stripes, in order that it may be more easily distinguished in foggy weather. It stands at 35 yards to the westward of the old Beacon, which still remains, but which has been cut down to a height of 24 feet, covered with a pointed roof, and painted in red and white stripes. The light-house is in latitude 46 deg. 39 min. 12 sec. N., longitude 53 deg. West of Greenwich. All bearings are magnetic. Var. 28 deg. W. in 1856. Increasing about 6 min. annually. By command of their Lordships.

Hydrographic Office, Admiralty, London, 1st October, 1856.

The Cattegat.—Intermittent Light on Hielm Isle.—The Royal Navy Department at Copenhagen has given notice that on the 15th day of November, 1856, a new light will be established on the Isle of Hielm, in the Cattegat, off the Coast of Jutland, in Denmark. The light will be intermittent, with a flash every fourth minute. It will show a steady light of the natural color for the space of two minutes 55 seconds, be suddenly eclipsed for 25 seconds, then exhibit a bright flash of about 15 seconds, and be again eclipsed for 25 seconds, when the steady light will re-appear.

The illuminating apparatus will be a catadioptric lens of the second order. The light will be placed at a height of 164 feet above the mean level of the sea, and will be visible all round the horizon; the steady light at a distance of 16 miles, and the flash at about 19 miles in clear weather. The eclipse will be scarcely observable when a vessel is within a distance of eight miles from the light. The light tower is a round brick tower, 37 feet high. It stands in latitude 56 deg. 8 min. N., long. 10 deg. 48 min. 30 sec E. of Greenwich. This notice affects the following Admiralty charts:—North Sea, general, No. 2,330; Baltic, general, No. 2,339; the Cattegat, No. 2,114; also, Danish Pilot, p. 56; and Danish Light-house List, No. 928.

On or about the 15th of December next, a light vessel will be moored off Cornfield Point, Ct, to mark the Long Sand Shoal, Long Island Sound. She will be moored on the south side of the shoal, and near the centre of it, in 7 or 8 fathoms water, and nearly due south (per compass) from Cornfield Point. She will be sloop rigged, painted red, with the name of the station (Cornfield Point) on each quarter in black letters, and will show a single white light. About the same time the fixed light now shown from Faulkner's Island Light-house, Long Island Sound, will be discontinued, and a fixed light varied by flashes substituted for it

By order of the Light-house Board.

New-York, Nov. 8, 1856.

LIGHT-HOUSE AT SABINE PASS.—A light-house has recently been erected on Brant Point, east side of Sabine Pass, Louisiana, and will be lighted for the first time on or about the evening of January 1, 1857, of which due public notice will be given. The tower is octagonal in shape, and painted white. It is 75 feet in height to deck of lantern. The illuminating apparatus is a third order Fresnel lens, showing at an elevation of 84½ feet above sea level, a *fixed white light varied by flashes*, and should be seen under ordinary states of the weather, from the deck of a vessel, at a distance of about 16 nautical miles. The approximate position of this light-house is: latitude 29 deg. 43 min. 55 sec. N., longitude, 93 deg. 50 min. 19.4 sec. west from Greenwich. To cross the bar bring the light-house to bear N. W. by N., and run in N. W., passing the Louisiana shore abreast of the light-house at a distance of 200 yards.

By order of the Light-house Board.

Galveston, Texas, October 29, 1856.

GAY HEAD LIGHT-HOUSE, VINEYARD SOUND.—In conformity with the notice dated July 22, 1856, the new light at Gay Head will be exhibited at sunset on December 1, 1856, and will be kept burning during every night thereafter from sunset to sunrise. The focal plane of the light is 48 feet above the ground, and 170 feet above the level of the sea. The tower is of brick, colored brown, and stands about 12 feet from the centre of the rear of the dwelling-houses, with which it is connected. The lantern is painted black; the dwelling houses are brick color. The illuminating apparatus is a revolving Fresnel lens of the first order, showing a bright flash of the natural color every ten seconds. The light should be visible in good weather from the deck of a vessel 19 nautical or 21 statute miles. The light now shown at Gay Head will be discontinued from the above named date, and in the course of the next season the old tower will be removed.

By order of the Light-house Board.

Boston, November 22, 1856.

CAPE HATTERAS BEACON LIGHT.—A wooden open frame-work beacon has been erected on the end of the Sand Spit extending in nearly a due south course from the Cape Hatteras Light-house. The beacon tower has an elevation of 43 feet above the mean level of the sea; is painted red and fitted with a 6th order lens apparatus. *A fixed white light* will be exhibited on the night of the 15th December next, and on every night thereafter, from an elevation of 35 feet above the mean level of the sea.

By order of the Light-house Board.

Wilmington, N. C., November 10, 1856.

DIRECTIONS FOR MANATITLAN, on the route to Tehuantepec, furnished by the Mexican Consul of Mobile:—

Sailing vessels bound for the Coatzacoalcos, ought to make the land to the eastward. This precaution is necessary on account of the prevailing trade winds, which cause a strong westerly current; also in case of a norther to have the advantage of sea room. The entrance to the river may be known by the tower, situated upon the western side, likewise from the sand cliffs extending from that point to westward.

The best mark for crossing the bar is to bring the tower to bear S. ¾ W. by compass. Having passed the bar, haul up to the eastward of south, and steer in midway between the two points that form the entrance to the river. The wind, after crossing the bar, often falls to calm; for this reason it is necessary to have the anchor ready to let go, as the current on the ebb, even in the dry season, sets out strong.

The extent of the bar east and west is about 220 fathoms, and the width by actual measurement 108 feet. The bottom, composed of sand and clay, is hard, on which account it is not liable to shift. At high water, on the fall and change, the depth is about 13 feet, and falls as low as 11 feet. The general depth, however, is 12 feet, from which, in sailing, it deepens gradually to five and six fathoms, except in heavy northers, there is a regular land and sea breeze; the latter sets in between the hours of 9 A. M. and noon.

The above is a copy of a letter from Captain R. W. Foster to the Isthmus of Tehuantepec Company, dated April, 1851.

CAPE COD MARINE TELEGRAPH.—A station of the Boston and Cape Cod Marine Telegraph Company, in instant communication with the Merchant's Exchange News Room, Boston, is erected a few rods North of the Highland Light, Cape Cod. Vessels by exhibiting their Telegraph numbers, will be reported at once to Boston and elsewhere.

Masters of vessels, and others whose homes are on Cape Cod, are respectfully notified to leave their address at the Exchange News Room, Boston, previous to their departure for sea. Any intelligence of their vessels received during their absence will be reported immediately by Telegraph to their families.

JOHN T. SMITH,
Superintendent C. C. M. Tel. Co.

Boston, November 21, 1856.

The Court of Directors of the East India Company have lately received from the Government of Bengal the following notification, which is published for general information :—

DIRECTIONS FOR APPROACHING THE SAND HEADS IN BOTH MONSOONS.—The South-west Monsoon may be considered to commence on the 15th March, on which date the Pilot vessels take up their station near the Buoy on the Pilot's Ridge, as described below. The S. W. Monsoon is over by the end of September.

2d. False Point Light-house is in latitude 20 deg. 20 min. North, and longitude 86 deg. 47 min. 15 sec. East; and a Buoy is placed 21½ fathoms on the Pilot's Ridge, in latitude 20 deg. 49½ min North, and longitude 87 deg. 42 min. East; the Buoy therefore bears from False Point Light-house North 59 deg. 49 min. East, and distant 59 miles.

3d. A vessel, therefore, after making the Light-house at False Point, (in passing which she ought not to go into less than 10 fathoms,) should bring it to bear about West South-west 10 or 15 miles distant. when she will be in 11 or 12 fathoms, then steer East North-eastward, when the soundings will gradually increase to 23 fathoms on the eastern edge of the Pilot's Ridge; she should then regulate her course so as to keep between the Ridge and 27 fathoms, when by attention to the lead and nature of the soundings, course and distance run from the Light-house, it is almost impossible to avoid making the Pilot vessels, as their cruising ground is immediately to the North-east of the Light Vessel stationed during the South-west Monsoon in close proximity to the Buoy on the Ridge.

4th. The soundings to seaward of the Pilot's Ridge are, in general a greenish or olive-colored mud, with occasionally a few bits of broken shells mixed with it; whilst those on the Ridge are of a shelly sand, or minute gravel, of a reddish or rusty brown color.

5th. Vessels approaching the Station are earnestly warned to be careful in avoiding collision when communicating with either the Light, or supplying Pilot Vessels, and, on making the former at night, they are strongly recommended to heave to, at a proper distance, till daylight, by which measure they will avoid the probability of passing the supplying Pilot vessels in the darkness of the night.

6th. The Eastern Channel Light Vessel is in latitude 21 deg. 4 min. North, and longitude 88 deg. 14 min. East; and therefore bears from the Buoy on the Pilot's Ridge North 65 deg. East, and distant 33½ miles. The Eastern Channel Light Vessel, from the 15th March to the 16th September, burns a blue light every half hour, and a maroon every quarter hour during the night, commencing at 7 P. M.; and her standing light is a plain light.

7th. The Pilots' Ridge Light Vessel shows from the 15th of March to the 15th of September, a plain standing light, and burns a blue light every hour, and a maroon at the intermediate half hours.

8th. It is important to observe the difference as to the blue lights and maroons shown by the Eastern Channel and the Ridge Light respectively, as, if this is attended to, a vessel out in her reckoning, or uncertain of her position, cannot possibly mistake one for the other.

THE NORTH-EAST MONSOON—9th. This Monsoon, which constitutes the fine season in the Head of the Bay of Bengal, is considered to commence in October, and end in the beginning of March. During this season the Pilot Station is about the outer Floating Light, situated in the Eastern Channel as above, and vessels coming in should make directly for that mark.

The Pilot-vessels cruise in the daytime, spreading East and West of, sometimes a little to the southward of the Light Vessel, and at night anchor in positions not far from her. At this season she shows a maroon or torch-light every half hour, and a blue light every hour.

Published by order of the Court of Directors of the East India Company.

East India House, No. 5, 1856.

I would communicate for the general benefit of navigation between George's Bank and Nantucket Shoals, the discovery of a Rip or Shoal not laid down on any chart ever published, having but 17 feet of water upon it. The position I have determined is as follows :—Sankoty Light bears from its centre W. 14 deg. N. or W. by N. ¼ N. distance 23 miles; north part of Fishing Rip S. nearly, do. 4 miles; Chatham Light N. 32 deg. W. or N. W. by N. ¼ N. do. 33 miles; longitude 69 deg. 27 min. The bearings are by compass, and the distance in nautical miles.

Chatham, December 9, 1856. GEO. ELDRIDGE, Hydrographer.

IMPORTANT TO VESSELS VISITING CALCUTTA.—The following is an extract of a letter received by the Chamber of Commerce at Boston, from the same body at Calcutta. As our trade with Calcutta is immense, it is of great importance to our shipping merchants :

" Every vessel exceeding the burthen of 200 tons, shall be provided with a proper force pump, hose and appurtenances, for the purpose of extinguishing any fire that may occur on board; and the master of every such vessel, who, after having been required by the Conservator to comply with such provision, shall, without lawful excuse, neglect or refuse so to do for the space of seven days after such requisition, shall be liable to a penalty not exceeding five hundred rupees."

PARMET HARBOR LIGHT, TRURO.—The Light at Parmet Harbor will be discontinued after the 31st of December.

Boston, December 8, 1856.

OUR STATE ROOM.

Bills to Come up in Congress.—The Amendatory Naval Reform Bill, which passed the Senate last session, has been taken up by the House Committee and referred back to the Senate, with a minority report by Mr. Bocock, striking out the Court of Inquiry.

In reviewing the progress of public opinion since the act to promote the efficiency of the Navy has gone into effect, and the developments of Congressional discussion on particular cases which were deemed exceptions to the proper carrying out of the law, we are constrained to believe that *time* has now pretty clearly developed that in the general, the selection of the inefficient by the Navy Board for the purpose, cannot now be condemned in any other way than by a very loose standard of efficiency.

The Hon. Secretary's Report contemplates full justice to whatever exceptions under the law; and the authority provided in the bill to transfer officers from the *furlough* to the reserve pay list, seems to meet the rest. It is therefore desirable that no bill be passed, in any manner conflicting with the efficiency now manifest.

House Bill No. 276—Bill to grant Bounty Land to the Officers and Crews of Privateer Vessels engaged in the various Wars of the United States.—We trust that the friends of this bill will insist on its being early taken up *and passed.*

"In all the legislation of Congress, designed to reward or in any way to benefit that portion of our citizens, who, in times of trial and of necessity, have come forward to aid the cause of the country—in all the legislation which has made good the losses accruing to seamen employed on Government ships in time of war, in consequence of the necessary destruction or abandonment of captured property—in all which rewards soldiers for services on the land and seamen employed on national vessels, which has included in its propositions teamsters of fourteen days' service, artificers and servants of soldiers, every class, in fact, whoever served in the Army or Navy, under orders, or by authority, however obscure as individual actors;—in all this legislation you have failed to recognise the privateersman—those old patriots—true and noble men—the pride of the nation throughout the War of 1812, and to whom we are indebted for the first fruits of our most successful marine adventures. These men of nerve and of courage, who never looked to the right or left when there was opportunity to serve their country, but went directly to the spot indicated by the finger of necessity, and there stood against any odds that could be brought against them, in defence of the honor of their country."—*Extract from the Speech of the Hon. Timothy Davis, of Massachusetts.*

It is seriously contemplated in Great Britain, to despatch another ex tion in search of the remains of Sir John Franklin.

General Order.—Surgeons and pursers shall wear the uniform of their relative rank, with the exception of the lace on the pantaloons; but the epaulettes, the shoulder straps, and the device upon the cap of Surgeons and Pursers shall conform to existing regulations. "Surgeons of the Fleet" will wear a silver eagle two inches in length, on the epaulettes, in place of the rosette now worn.

J. C. DOBBIN,
Secretary of the Navy.

Navy Department,
August 23*d*, 1856.

The uniform of their "relative rank," here referred to, is understood to be lace on the cuffs, by which regulation officers of rank are now designated.

The Navy Yard on the *New-York* station has for several years been gradually improving, but within the last few months the ruins of the old smitheries along the main avenue have all disappeared, and the immense brick edifices which have been erected in their places present an imposing appearance. In due time, we hope to see the remaining old buildings which encumber the wharves likewise removed for others better adapted to the uses they are intended to serve; and then with proper legal provision for building new ships instead of the now bad policy of re-building old ones, this station will be equal to any emergency in peace or war.

Capt. Hudson has been ordered to the command of the *Niagara*, and she will probably be ready for a trial trip early in the spring.

The *Falmouth* is fitting out to relieve the Germantown on the coast of Brazil. The following officers have been ordered:

Commander—E. Farrand; *Lieutenant*—Geo. W. Rodgers; *Surgeon*—J. J. Abernethy; *Purser*—J. P. Abbot.

A store-ship will be despatched to the Mediterranean squadron soon.

The frigate *Savannah* arrived on 27th November.

Some *seventy* men have been discharged from the *Charlestown* Navy Yard in consequence of the cold weather.

Commander Mitchell has been ordered to the *Pensacola Yard*, in place of Com. Farrand, ordered to the *Falmouth*.

The *Preble* arrived at *Philadelphia* on the 15th ult., from Annapolis, for the purpose of overhauling, repairs and outfit.

The *Philadelphia Journal* states that there is some probability that the Navy Department will soon take proper action towards *propellerising* the Pennsylvania.

The *Saratoga* arrived at *Norfolk* on the 7th ult.

Dec. 4th. The *Independence* and *St. Marys* were lying at Panama.

The *Cyane* arrived at Aspinwall on 29th November.

The *Germantown* sailed from Montevideo for Rio Janeiro, 24th October.

The naval force of Spain consists at present of 4 ships of the line, 10 frigates, 5 corvettes, 11 brigantines and 11 smaller sailing vessels; 32 side-

wheel steam frigates, 4 screw frigates, and 6 smaller steamers—together, 82 vessels, carrying 1301 guns of various calibre.

SUB-MARINE TELEGRAPH BETWEEN NEW-YORK AND BROOKLYN.—The wire is a heavy sub-marine cable, and crosses the East River near the Hurl Gate ferry, where vessels never anchor, unless in circumstances of peril, and are liable to go ashore; so that the probability of the cable being disturbed is very remote. A pilot on the ferry is instructed to keep watch, and afford any assistance that may be required for its protection. The cable is half a mile in length. A wire is carried through the city, on poles, in the usual way, and after crossing the river, it passes through Astoria and Williamsburg. It went into operation on the 15th ult. Besides being connected with all the city offices, it has special stations at the New-York and Metropolitan Hotels, at Chatham Square, and at the St. Germain Hotel, cor. Broadway and Twenty-second streets.

NEW BETHEL SHIP.—The Bethel ship John Wesley, which has been stationed so many years at pier 11 North River, was recently condemned as unfit for the service, and will be replaced by the bark Carrier Pigeon. She was built about six years ago as a propeller, but was subsequently altered to a sailing vessel. Her registered capacity is 350 tons.

DEATH.—Lieut. J. T. WALKER, U. S. Navy, in New-York, 25th Nov.

SINKING OF THE RECEIVING SHIP UNION.—The United States receiving ship Union, at anchor off the Navy Yard, at Philadelphia, Dec. 19th, was so badly cut by thin floating ice that she sunk in about thirty feet water. The United States sloop of war Preble was at anchor close by, and succeeded in saving the stores, ammunition, and all hands. The Union is a very old vessel, and has been unseaworthy for many years. She will be raised and broken up.

VISIT TO THE BROOKLYN NAVY YARD.—A week or two since, the Editors of this Magazine paid a somewhat lengthy visit to the Brooklyn Navy Yard, accompanied by an eminent naval engineer from France. By the politeness of Mr. Delano, the Naval Constructor on this station, we were shown all the ships, workshops, machinery, timber-sheds, and last, but not least, the *Naval Lyceum*. The Lyceum is worthy a visit from every lover of country, of science and Naval history. Among the various magazines on the table we did not observe the *Nautical*. We presume some officious visitor had *borrowed* it. We will furnish, gratis, any missing numbers; for the Naval and Nautical history of the times will, in future years, be incomplete without full sets of this work.

The steam frigate Mississippi is receiving a most thorough re-construction; Mr. Delano being determined to improve the ship in every possible particular. Her guards have been raised and strengthened, the poop is removed;

new boilers are going in, and we were gratified to observe that they were enclosed by *iron bulkheads*, which are placed in other parts of the ship also. We wish to observe that the Naval Constructor on this station is ever kept most arduously employed; the salary is too low, and too much unremitting attention is required at his hands to the details of business. Mr. Delano has scarcely been out of the yard for one or two years. It is absolutely necessary for an improving ship-builder to see other men's work in different parts of the country every year. Let the Department take this into consideration, and give our Naval Constructors opportunity to travel.

Our friend from France expressed his admiration at the proportions and workmanship of the Niagara, and was pleased with the neatness and order prevailing in every portion of the yard. The gun-carriages making for the Niagara in the work-shop, were especially admired. They are of the Dahlgren order, and we think are the finest ever manufactured for any ship-of-war in the world.

Direct Propulsion Proposed.—We have received a note from the Editor of the Spanish newspaper, "*Registro Mercantil*," calling our attention to an article of Dec. 18th, in which he discusses the comparative merits of the side-wheel, the screw, an endless paddle chain, and lastly, the idea of an unborn invention, of direct action, from the thrust of a huge, circular paddle blade erected on the extremity of a piston shaft, projecting through the stern, and operated by a steam cylinder. The Editor writes that it would "afford him great pleasure if this suggestion could be of any avail in promoting a good invention." Suggestions stimulate study, and are therefore useful, but we see nothing promising in the direct acting piston for propulsion. We gave some thought to this very idea some years ago, and discovered that it was impracticable. What is wanted in propulsion for ships is a continuous, unremitting application of power, and not a series of shocks and thrusts. The *time* lost in the return of the piston, in direct action, would be one-half, and it would be impossible to secure a sufficient velocity of piston to propel with any tolerable degree of speed. The resistance that would be encountered by the return of the piston would be enormous, notwithstanding the circular blade would be fitted with numerous valves opening to admit the water to pass through. Every practical engineer must condemn the project. Let our Spanish friend think again. Spain once led the world in ship-building and navigation.

A Short Passage.—The clipper ship *Boston Light*, Crowell, master, which loaded hence in Mailler, Lord & Quereau's Line, arrived at Melbourne 26th August, in a passage of 77 days.

This is not quite equal to the passage of the *Mandarin*, Capt. Perit, who made the last run to Melbourne from New-York in 70 sailing days, being an average of nearly 200 miles per day the entire passage, and apparently five days shorter than the famous run of the *Nightingale* in 75 days.

THE

U. S. Nautical Magazine,

AND

NAVAL JOURNAL.

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MARINE INSURANCE.

PERHAPS in the category of invested capital in the United States, there is not a more extended list of abuses than may be found in the present system of Marine Insurance.

The theory of probabilities has long since been reduced to a science, and although human life is classed among the most uncertain events, in reference to its duration, yet the principle of Life Assurance may be readily computed with a tolerable degree of certainty on the same basis as that of annuities.

The value of a policy of Insurance against Fire on a house, may also be determined on principles of equity by this theory; but to apply the same rules to a ship, is the height of absurdity. It is assumed that the vessel is insured against the dangers of the sea, whereas the greater proportion of the risk is against the dangers of the ship and her management. In the manner of construction, outfit and management of vessels, the risk is tenfold greater than in those of the seas, and for the following reason, viz: The science of *mechanics* has never been consulted in their construction. *As far as constructive art is involved,* it may be readily known why a greater proportion of vessels are lost now, than in former years. Their size has been greatly increased, while the proportions of the materials have remained about the same: a ship of 2,000 tons is furnished with no more intrinsic strength than another of 1,000 tons capacity; whereas the larger ve should have double, because she carries double the load. A ship of feet long has scarce 50 per cent. more of strength of materials than 150 feet long; whereas, to be equally as strong as the short ship, she have eight times the amount of strength in materials. The proporti to the different parts of vessels for navigable purposes, have never

determined, *except by those rules of thumb in general use.* Who knows how large a keel, a keelson, a floor, a beam, a mast, or a yard, or even a sail, should be, in order that *the strength and the strain, the stability and the leverage, the resistance and the power, may be commensurate?* Echo answers, Who? And we pause in vain for a response. And yet, with this mass of ignorance in the elementary principles of Nautical construction, we find associations on one side of the Atlantic, and individuals on the other, arbitrarily giving dimensions in detail, without ever having attempted, or even thought of, a solution of this great problem, upon which the safety of life and property chiefly depend at sea. Away with such conceited folly, based on ignorance of the very first principles in *Mechanics;* it is unworthy of this age of light; it is unworthy of the stupendous art to which it is applied. The *Variable Calculus,* and that alone, can furnish the proportions in detail of the various parts of a vessel's materials and fastening, in the order in which the strain is applied. Still with *this entire absence of system in determining the amount of bulk and strength in materials,* aside from the many glaring frauds of which we have yet to speak, there are many who suppose that the probabilities may be approximated sufficiently near to enable insurers to make money. Nothing can be more absurd.

The Mutual system of Insurance seems to have met with favor, and not a few of these organizations stand out as models, in the amount of public patronage they have received. By this system the merchants are the insurers, and, as a consequence, the losers, when loss occurs, either in policy or dividends. There is annually appointed by the Board of Directors a President, one, and in some cases, two Vice-Presidents, with one Secretary, and from one to three surveyors; these form the executive administration, responsible to the Board of Directors. There have been cases in which Presidents (who held the most responsible positions) were not even financially interested in the affairs of the Company, beyond the amount of their salary; yet, in a few years, they were quite competent to retire, after striking a balance between their salary and expenses, which salary was supposed to be only commensurate with the maintenance of position in the orbit of fashionable life. The subordinate officers are generally less fortunate, their salary being less, without divisable perquisites. In assuming risks, the most important and responsible trust is committed to the surveyor in classifying vessels; inasmuch as the amount of premium to be charged, or risk taken, or whether to be wholly rejected, depends upon his qualifications, but who, alas! have too often proved incompetent for the high trust imposed, either from a want of integrity of purpose, or from want of a knowledge of the elementary principles of constructive art. The latter disqualifying result may be seen every day in the week, while the former is known only to those conversant with the tricks of the trade. It is our privilege,

and shall be our province, to lift the veil sufficiently high, to expose an amount of corruption that will be found to be commensurate, at least, with the late excess of maritime loss in the United States. It is a great mistake to suppose, that the shipmaster who has lost the most vessels is best qualified for a Marine Surveyor; a premium has too often been offered in this way for losing vessels. It may be, and often is, an advantage to a shipowner to have his vessel wrecked; and as a reward for such service, the owner, who has influence at court, secures him the berth of a surveyor to practice on a more general scale, unless the owner has made enough by the underwriter's loss to build a new ship, when the shipwrecked master is rewarded with the command. The shipwright, who repairs vessels, sometimes finds it to his interest to become surveyor, on special service for a shipowner, whose ship has just been reported to be ashore; and be it remembered, that she is covered by insurance, say for $80,000, which is somewhat beyond her value, and, as a consequence, the vessel is abandoned. The owner has a sufficient amount of sympathy for the Company to assist them, and makes a special survey at his own expense; consequently, the shipwright referred to, is sent down to the beach to survey the vessel, and he is careful to furnish a plenteous supply of copies of his report for gratuitous distribution, while he secretly revises another report for the owner. This special survey, when published, often reads thus: "*Ship very badly strained*, hogged, and otherwise greatly damaged; if weather continues favorable, may be got off." The ship is finally got off, and having her character previously established, *by special survey*, is sold for ten thousand dollars to her former owner, who employs his surveyor to repair her, at an expense of, say, fifteen thousand, and then, after paying for two gold watches, one for his own, and the other for the Company's surveyor, who screws up her classification to the highest grade, he secures a policy of Insurance for seventy-five thousand; the ship is again sent to sea, to form another chapter in the captain's experience on the Dangers of the Sea *versus* the Ship and her Management.

Again, a shipwright is sometimes called on by a ship-owner to examine the metallic sheathing on his ship's bottom; he has too much work on hand to strip the vessel, although he knows she needs it, and rather than lose the job, he reports her sheathing good for another year, with patching. The owner is ready and willing to do his duty to the vessel; but the truth is, the shipwright has no time to attend to it now, and if he can stave off the job until next voyage, he may not be so busy then; and if it should be necessary to copper the ship in Liverpool, it may be easily made out to be the underwriters' job, and then he will have done the owner a service, and still retain his work.

Another case in point, gleaned from the history of dry, sectional and balance docks:—A large ship touches on Diamond Reef; it is enough, although the only damage was a *champhire* off the corner of the keel, and one

or two soft spots in the garboard seam; yet, it is the underwriters' job, and the shipwright has plenty of time to attend to it now; the butts are falsely charged with being open, and the metal must come off, notwithstanding the faulty butts refused to take a single pound of oakum, unjustly at the underwriters' expense.

Another channel of fraud is found in the system of open policies. But the most prolific source of corruption lies in the classification of vessels. A shipwright has a private agreement with a surveyor to bring him work, for which the surveyor receives a *per centage*, as a reward for his services; and wo betide the shipowner who has to pay the bills necessary to secure the desirable classification. It is often found, upon investigation, that a vessel obtains a classification far above that to which she is entitled, it having been made (as expressed in common parlance) *all right*, although the surveyor, in many cases, has never crossed the rail of the vessel. This all right term is doubly expressive: with the honest surveyor, it means that the vessel has the character to which she is entitled, while on the other hand, it implies that the vessel may have an adjustable character, provided the account is adjusted to the satisfaction of the surveyor. Frauds are not unfrequently practised in the construction of vessels, by which means new vessels are classed above the grade to which they are entitled; while the surveyor of the district in which the vessel was built, has furnished all the Insurance Companies with a copy of his classification, which formed the basis for taking a risk on the vessel and her cargo. We have one now in our mind—a case of recent occurrence: The ship had just been on the dock; was coppered and ready for sea, with an insured cargo on board. The vessel leaked; but the fact was unknown to more than one office, where it was noted in the column of remarks in the book of classifications. In going to sea, she got ashore; increased her leak; was brought back; her cargo discharged, and sold by the underwriters. When the vessel was docked, the bilge and keel, which were the only parts of the vessel injured, was stripped and examined, when it was found that her treenails were quite short; several in the same plank, near together, were found to have been but from two to four inches into the timbers, while a butt-bolt was found driven between, instead of through the timbers; in addition to this, the bottom was light, being but three inches thick, while it should have been, at least, three and a-half, or more properly speaking, four inches thick. The treenails were of hackmatack, instead of oak or locust. Such developments were well calculated to arouse the suspicions of all surveyors who were not a party to the fraud, and cause them to insist upon stripping and refastening the bottom. And now comes the test of Interest against Principle. The underwriters of the vessel and cargo did not want the vessel examined and made right, because it must be at their expense; but the owner protested against re-fastening her, and contended the ship was well built; but

the surveyors, who had carefully watched the vessel's movements, and noted her leaky condition before going to sea, determined to reduce her grade unless the work was done thoroughly. The surveyors, in this case, were the victors, inasmuch as the vessel was stripped, re-trenailed and re-coppered. Vessels have, in many instances, been classified at an inferior grade, for no other purpose than that of obtaining a job in carrying out suggested improvements; and in some cases, the vessel would be better without than with them. On the other hand, underwriters have taken risks against their own judgment, against the counsel of the surveyor, and the admonition given in the vessel's character on the books of the office. They do it because the shipowner is a patron of the office, and they have not the moral courage to refuse him, while their intuitions tell them that they are selling their glorious inheritance—their independence, without receiving an equivalent in return. The manner of adjusting claims against underwriters is the fruitful source of abuse. The underwriters do not pay any bills of repairs for damages at sea, unless they amount to five per cent. on the vessel or cargo, as the case may be. This is expressed in the policy; but by a general understanding among themselves (in reference to the vessel), not known to the uninitiated, they deduct one-third of the bill of repairs for new, and still there must be five per cent. of the amount of policy remaining, or they refuse to pay that which they have made an agreement, and are in duty bound to pay; but which responsibility, by concert of action, they have managed to throw off. No insurer is caught more than once by this device. Underwriters have lost millions by this arrangement, in paying wear and tear bills, which must of necessity be thrown in, *to make weight of five per cent., one-third off for new*; whereas, if they had paid the bills of damage, deducting wear and tear, their losses would have been incalculably less.

Another prolific source of disaster, is the indifference manifested by underwriters at the qualifications of shipmasters. A lack of good seamen causes a lack of good captains; and ships are sent to sea under the command of men who should be in the forecastle, instead of the cabin, to learn lessons of experience. We have now in our mind one shipmaster, who has been *forty years at sea without a disaster*, to his honor be it spoken, and another who was not a navigator (leaving that part of the duty to his mate), and although not five years of his life was spent at sea, both under and in command, yet in his brief history, he never made a voyage while in command without a disaster, and some of the most serious kind—one, the loss of the vessel. And yet, in the case of the master of forty years' service, the underwriters allow to pass unnoticed; while the unskilled navigator, whose wake is strewed with disasters, is rewarded with a lasting memento of their appreciation of his services.

The abuses in Marine Assurance are painful to the contemplative mind;

not a few of which grow out of the practice of insuring vessels quite up to, and far beyond their real value. No man can be accredited with honest intentions, who seeks to have his vessel insured beyond her real value; and may we not go farther, and qualify the remark, by substituting, *fully up to her real value.* Unless the owner participates in the loss, when an insured vessel is wrecked, there is no such thing as equity in Marine Assurance, and this remark is equally applicable to the cargo.

APPRENTICES—NAVAL AND MARINE.

In ancient times there were no apprentices to anything. The indubitable right, which every individual possessed in his own works, was considered the just patrimony of every one; and this principle is as true when applied to apprenticeships as it was without them, for it in effect, acknowledges the right by the agreement. The apprentice barters his work for its equivalent, in the master's obligation to teach; and the equity of the mutual obligation depends upon the aptitude of both parties, requiring advantages in time for either in proportion to the facilities of acquiring a mastership, according to differences in the occupation. Time and labor is given by both parties, instead of money, and the trade or profession is usually profitable or unprofitable; in other words, *commands wages*, in proportion to the time, cost and difficulties in acquiring it, and also the degree of perfection attained in its exercise. Hence it is that the well-skilled are not only more sought after, but better paid; and hence it is, too, that those occupations attended with grades, or step by step advances, as the sailor, each carries with it an increase of pay.

The different occupations which present themselves develope the talents for special pursuits, in proportion to their availability, and generally the most successful men in any avocation are those who have been best trained in their apprenticeship; and to excel *in*, not to have a fancy for, an occupation, is what constitutes superior talents or genius. Whatever may be the difference in the talents of men, boys are generally much more alike, and the differences of after life depend more upon educational training than upon natural genius.

The uncertainties of success are rarely ever considered by the youth, in entering upon a profession or trade, as depending upon anything else than his power to acquire a knowledge of the avocation of his choice. The romantic hopes of the sea have, in all times, constituted a strong incentive to youth, and the lad who makes choice of it for a livelihood, usually surpasses all others in the impetuosity of his presumptions of success, in a determination to surmount whatever dangers; and to this circumstance it is doubtless

owing, that the prime necessity, *Education*, to sure success in any pursuit, is so much neglected.

Husbandry alone, is the only occupation of man, to which, in modern times, an apprenticeship is not deemed necessary. That, of all others, presents a fruitful field of labor at the outset; yet, the art of the husbandman has its difficulties, and education is essential to its excellence.

A sea-faring life is the furthest possible remove from husbandry, and of all occupations, the pre-eminent fruit of education. Education measures the progress of Christianity and civilization; commerce follows, and with its advancement is necessarily associated intellectual improvement. In this our age of commercial progress, education has justly become the indispensable prestige to the successful prosecution of whatever pursuit, and the realization of this prime necessity has stripped the sea-farer of his characteristic rudeness. The old *regime* which constituted the sailor, have lost their attractiveness. "As ignorant as a sailor," has lost its distinction; and the trade which requires no education for its followers, has rightly become of so bad repute, that the scarcity of *naval* seamen begins to be a national grievance. But in the face of such signs of the times, in April of last year, "REGULATIONS FOR THE ENLISTMENT AND GOVERNMENT OF APPRENTICE BOYS FOR THE NAVY," were issued by the Department, without any provision for educating them, though the said REGULATIONS purport to rear up *a body of the best seamen!* By these, the apprentice on enlisting, is required to possess all the attributes, save education, which would best qualify him for a respectable and lucrative trade, and they are *promised* the particular care and attention of the executive officer, who is "*enjoined* to adopt the most efficacious means in his power, under the approval of the commanding officer, to have them carefully and regularly instructed, at suitable times, in rigging and unrigging yards; bending and unbending sails; knotting; splicing; sewing canvas; roping sails; the use of the marline-spike; the care of their hammocks, and lashing up and slinging them; exercise at suitable guns; quilting grape-shot; making musket cartridges, wads and tubes; boat duty; and generally all branches of a seaman's duty, and also, in reading, writing and arithmetic, the rudiments of navigation, and use of nautical instruments." . . . . "For this purpose he will have them . . . . under the charge of *proper* forward or petty officers, who will render weekly reports &c., of their conduct." After which follow what will and what will not be allowed such apprentices, and *their* obligations. They can in no event enter the line of promotion, but by good conduct may attain the *ratings of petty officers*, or for *marked ability* they may be eligible to warrants as BOATSWAINS or GUNNERS. In this agreement with the apprentice, the Government obliges itself to nothing. The executive officer and others, who are *enjoined* to carry out the regulations, so far as they pertain to reading, writing, &c., have no facilities for doing so; and even on board Receiving-ships,

where it has been undertaken, no plan has yet been continued. In every instance where their education has been undertaken, the object has been soon after abandoned. There are no means to this end, nor persons adapted to the duty. What is the remedy, and what the resource of the apprentice? The agreement is all on one side—binds the apprentice to everything, the master to nothing. There is no possibility by which such training can result in the *best* seamen. The lad who enters it finds forever after an interminable barrier to his advancement, and he must of necessity be considered one of a body of the *worst* seamen, because incapable of promotion. After years of toil, on a bare pittance, if he has natural *marked ability*, he may attain to a warrant, which will doom him for life to an avocation which can never pay him more than six or eight hundred dollars per annum. The same natural abilities, with better opportunities for education, in the Merchant service, would render him capable and available to a best command.

Many merchants and merchant captains take apprentice boys in their ships, who have hours specially appropriated to education, and here the way is open for the best to *be* the best, with wages constantly in advance of those for the Naval service.

In neither the Government nor Merchant service is there any *system* provided, by which the supply of seamen can possibly fulfil the wants of commerce. Many remedies have been suggested, and several tried, but none have thus far fulfilled the necessity. The present Naval Apprentice system is nothing less than an odious provision for *serfs*, wholly inconsistent with the spirit and scope of our laws, and every mind capable of appreciating the benefits of education, should exercise influence against it. No parent or guardian should submit to articles of agreement which look only to one side, which doom the apprentice to continuous subordinate position.

The Obligatory Apprentice System sought for by merchants, by which each ship, in proportion to her tonnage, shall be compelled to take so many boys, is likewise inconsistent with freedom of occupation and untrammeled pursuit of business, and, in the opinion of Mr. Webster, therefore *unconstitutional.* A remedy thus provided would, in many cases, become a burthen. One merchant or one ship, according to peculiarity of trade, might require and make good use of a large proportion of boys, which another merchant or ship would find not only useless, but an obstruction to trade. Scarcely two merchants or captains can be found to agree on the same proportion; hence it must needs be that no proper provision can be attained under any such system.

The University of Trades was the parent of the University of Arts. The "University of Smiths," the "University of Carpenters," &c., with charters comprehending the number of years necessary to acquire a mastership in these occupations, existed long before the Universities for literary and professional learning, while apprenticeship was applied alike to the junior

ship-carpenter and the doctor. Apprenticeships altogether are of modern origin, the product of civilization and scientific advancement, and they have been applied to the various pursuits of man, in proportion to the degree of perfection necessary to the attainment of a complete mastership.

The *regime* of the Naval Academy at Annapolis maintains a thorough knowledge of all that is essential to the qualification of a seaman, and in *addition*, whatever knowledge is peculiar to the officer. The former is only short of the latter. A *perfect* seaman must necessarily be qualified for the duties of an officer, taking in its scope, of course, the necessary education. The plan of this Institution might be so modified as to cover a well organized Apprentice System. The repugnance of some Naval officers to possible rank with one who has been an apprentice, when applied to *merit*, is both unjust and irrational. Fifty years ago, a taste for the arts, or desire for excellence in those sciences which have, of late years, so distinguished some of the officers in our Navy, would have been the subject of ridicule. It is unreasonable to encourage these beneficial modifications of character as applied to the officer, and deny them to the sailor. Shall not *his* character, too, be improved? Because the sailor has hitherto been treated as an unreasonable being—disallowed the privilege of thought, is that the reason for a continuation of the treatment? Heretofore an educated sailor has been considered a prodigy—unless he may have a chance to become an ignoble one by a fall from some better position. One who, amidst the hardships of his position, could teach himself mathematics, would be considered as having neglected his duty, and therefore, so far from gaining, he would be more likely to lose position.

But sailors (including officers) have undergone a metamorphosis in these latter days. Education has ceased to be considered a dangerous thing for anybody or class, and those who fear it are only to be found among such as have just reason to fear a change of places with those whom they would stultify. Now-a-days, the would-be sailors are like as other boys and men—they would be educated, and would be *taught*. The chances of an education without teaching are too uncertain to be risked, even though individual effort has ceased to be less odious than in times gone by. A landsman on board ship left to the chances of a *flat-not*, has first to encounter many *grannies*, which one minute's instruction would wholly do away with. True, sailors have heretofore "earned their money like horses, and spent it like asses;" but such conduct was according to their breeding, the legitimate result of their treatment, which had in it none of the sympathy which appertains to reasoning beings. To no other class have the same prejudices and delusions pertained. The sailor has been treated as an animal without thought; hence it is not surprising that he became thoughtless, and even brutal. Make them and treat them as men, and *men* and the *sons of men* will be made sailors.

Call the Naval Academy by another name, and extend its benefits; for every mariner is in the service of his country, and is therefore as much entitled to a national education as the Naval officer who is to command him. Establish in every seaport Apprentice Ships, with the necessary facility for mental culture, as well as physical training, for as many boys as the wants of Commerce and the Naval service may dictate, and there let them be *taught* their occupation, and be advanced according to their aptitude.

Let the Government take them from fourteen to eighteen years of age, subject to six years enlistment for the Naval service, providing annual examinations for their ratings and pay, according to advancement, and requiring of each a period of service after qualification for ratings—with necessary support only—equal to the time occupied in becoming qualified; on the termination of this period, provided it be within the six years, leaving it optional with the apprentice to continue in the Navy to the end of the six years on the pay of his rate, or to take his discharge. Also providing, that as many of such apprentices as may complete their apprenticeship within *four years*, and whose age and characters come within the obligations of the law for Midshipmen, may be permitted to contest an examination for the line of promotion. And further providing for eligibility to forward officers, and petty officers' appointment, in accordance with the aptitude and early completion of apprenticeship.

The cost of such an Institution consists mainly in its first adoption; afterwards the apprentice provides—or pays for in his service—all the expense he may have occasioned. For its adoption, the national Treasury contains an abundance of *sailors' money*. Not less than *two millions of dollars* have been forfeited to our Government by death and desertion in the Navy. This amount has never been appropriated to any use, and there is no use to which it could be so well adapted as that of educating and training such of our native born youth as would become sailors. An Institution thus formed and conducted would attract all such. In six years' time—and ever afterwards—our commerce would be represented to the ends of the earth, by such a race of American seamen as would reflect alike honor on themselves and the flag they would bear.

EXPANSIVE POWER OF STEAM.—Chemists have ascertained that gunpowder is one thousand times denser than the atmosphere. If, therefore, one thousand cubic inches of atmosphere were compressed into one inch, the one inch would be of the same strength as one cubic inch of gunpowder. Steam possesses about one-half the gravity or weight of the atmosphere; therefore, if 1,728 inches of steam, which can be generated from one single cubic inch of water, were compressed into one inch, it would become nearly twice the strength of one cubic inch of gunpowder. This fact will illustrate the great expansive power of steam.

[For the Nautical Magazine.]

SHORT LETTERS FOR UNDERWRITERS.

Dear Editors:—I see some long-winded articles floating through the press, purporting to examine the causes of disasters to so many of our Insurance offices, and to account for the serious losses daily falling upon Underwriters, which seem to me to have too little point in them.

One of the most common causes of shipwreck may be found in the incompetency of masters who lose their vessels. They either lack capacity, experience, caution, prudence or honesty, who lose their ships under any circumstances, except by stress of weather or some unavoidable accident. To be a competent ship-master, a large share of the above qualities are essential. In selecting masters, ship-owners too often overlook the most important of the above, viz: EXPERIENCE. They ask, is he a driver? is he economical? These two qualities seem to satisfy most ship-owners. Their maxim is, "Short passages and small disbursements." Blowing away sails, losing spars, and occasionally a *vessel*, appears to be of little or no consequence. "The Underwriters are paid for keeping those things right;" thus argue owners.

Suppose—well, we need not *suppose* a case—but say, we suppose a case.

A master loses his vessel by running ashore, (perhaps with steering-sails set,) or in many other ways, it matters not; if fully insured, and duly paid for when lost, the captain is immediately placed in a better vessel. Perhaps the Underwriters will suspend him for six or twelve months, to "teach him to be more careful next time"—what of it? The owners will employ him to superintend a *new* ship. Thus the "captain" has an opportunity provided to learn *how* to superintend and fit a vessel, for which favor he is indebted solely to the considerate Underwriters. After repeating the same feat once or twice, the "captain" will be likely to turn up a retired ship-master, or become an *experienced* shipping merchant, and will have learned exactly how to talk to the "mean Underwriters, who are always very glad to receive *premiums*, but grumble when they pay a loss."

What does a suspension amount to? Is it any disgrace under circumstances like the above? Certainly not. On the contrary, we think such slight reproof for so great a violation of the rights of property, as is often glaringly manifest in shipwreck, taken in connection with the silent, if not expressed approbation of the owner, furnishes an inducement rather to "lay the old bones on the beach."

We fear few captains would take any very great precaution to prevent a practicable shipwreck, if they felt sure of getting a better ship, and could get one only by such means. And why not feel sure? Did not Captains A, B, C, &c., to the end of the alphabet, all lose their vessels—and have they not all got much better ones? Thus might any ambitious capt-

argue, and argue truly. If shipwrecks entailed loss of property only, and that only between the insurer and insured, then "'t would be nobody's business," perhaps. But how many innocent lives are lost, and how many poor people lose their all at every shipwreck? These are serious acts, and the remedy is with the insurer—the prevention with the insured. The former has power to correct this growing evil, and it is a duty they owe themselves, the public, and all concerned.

There need be no proscription or persecution, but simply require of every ship-master that knowledge, caution, prudence and attention, which such a high and responsible command requires, and which every American ship-master ought to feel proud to possess, without the arbitrary restrictions of either owners or Underwriters. Impress the mind of the American mariner to feel that he has degraded himself by neglect of duty, and you will seldom hear of vessels running on shore with all sail set, while they were *snoring* in their cabin, or running over soundings without *casting the lead*.

There is more reform wanted in the cabin than in any other part of the ship. When crime goes unpunished, it ceases to be crime; and so when incompetent and careless commanders are rewarded, there is little encouragement for improvement in the affairs of

UNDERWRITERS.

NEW-YORK AND LIVERPOOL PACKET SHIP OCEAN MONARCH.

THE Ocean Monarch is the largest sailing ship built in the United States in the year 1856. The main features of her model may be described as embracing the flat floor, fairly developed bilge, and tumbling home topside, in combination with the long bottom, long rotund midship body, hollow water line extremities, rather sharp ends, lightly flaring and full bow above water, fairly developed square stern, with a good round, and with counter and upper knuckle. The head is finished with a medium proportioned and gracefully defined cutwater, which is 13 feet long including the scroll head. The sheer is lively, the sparring moderate, while in symmetry and noble proportions, the Ocean Monarch stands upon the sea without a rival in her trade.

The materials and workmanship of this vessel have never been surpassed in merchant shipbuilding in New-York. Her constructor was WM. H. WEBB, and she is the 117th vessel which he alone has added to the mercantile marine of the United States within a period of 16 years.

The following are the dimensions of the Ocean Monarch:

	ft. in.
Length between perpendiculars - - - -	242.2
Length over all - - - - - - - -	255

Breadth for Custom House tonnage	43.7
Breadth extreme	45.10
Depth of hold to upper deck	30.2
Custom House measurement	2,155$\frac{32}{95}$ tons
Builders measurement	2,785$\frac{22}{95}$ tons
Number of passengers by law,	882
Draft of water when fully laden	24ft.
First cargo to Liverpool weighed	2,900 tons
Draft of water with the same	23ft.
Draft of water without cargo or ballast	10 feet
Capacity for cotton cargo from	7,250 to 7,300 bales
Ballast required for said cargo	400 tons

This ship was launched on the 15th September, shipped her cargo, and arrived in Liverpool on the 4th November, last. She carried the largest cargo of grain which has ever crossed the Atlantic; it consisted of 72,370 bushels of wheat and 33,457 bushels of other grain, in all, 105,827 bushels, weighing 2,770 tons; besides 30 tons of rice, a quantity of dyewoods, and other articles. With this enormous cargo the Ocean Monarch averaged 12½ knots during strong breezes. Such a great ship should be furnished with steam power to handle her anchor gearing, cargo, and heavy canvas. That the Ocean Monarch has not been so furnished is not for the want of a precedent, and the arrangement of the proper machinery. A few American ships have been furnished with steam engines, and they have been found very profitable helps.

Where a shipbuilder has done so much towards the perfection of his Art as Mr. Webb has done in this instance, it is to be regretted that a corresponding spirit of *progress* has not pervaded the minds of those whose money paid for the outfits. It is true that the Ocean Monarch is well found, but no attempt has been made in the equipment, as in the hull, to eclipse the past.

The timber used in her construction was originally intended for the building of an 80 gun man-of-war for the Russian Government; it had been selected with care, and had been seasoning for two or three years. The dead-woods, fourth futtocks, all the cant frames, counter and stern timbers, top and half top-timbers, and the deck breast-hooks, are of live oak. The stanchions in all parts of the ship, and the trenails are locust. The keel, kelsons, stem and stern post, floors, first, second and third futtocks, outside planking, hanging-knees, rudder, &c., are white oak. The beams and inside covering are yellow pine. The berth knees of middle and lower deck are white oak, those of the upper deck are hackmatack. The decks are white pine, 6 inches wide and 3½ inches thick.

The fastenings exhibit the most thorough and judicious system in every department of the construction—this ship is one of the very best fastened vessels ever built. Mr. Webb is one of those who know that the strength

of a ship depends necessarily upon her *fastenings* rather than masses of materials that may be assembled together.

The outside covering is square fastened with copper bolts and through driven locust trenails, up to deep load line, and above this line iron is substituted for copper. The fastenings of kelsons and deck frames were driven before the planking was worked. All the trenails are wedged inside and out. The inside covering is square fastened with iron. The two thick garboards are respectively 8 and 6 inches, and 15 inches wide; they are scarphed edgewise and bolted through the keel and frame in the most thorough manner, 2½ feet apart, with copper bolts. Great care has been taken to make these garboards strong, and avoid an inferior description of workmanship, through the faults of which many large ships cannot be made tight. These faults consist in not scarphing the pieces to each other, whereby the butts remain stiff and unyielding, and soon work out the oakum; and in carelessly permitting the edgewise fastening to be driven too near the external opening of the seam, preventing it being well caulked. Garboards should always be bolted from each side, and not through and through, for it is not practicable to bore the holes properly in such manner. In many yards the hole borers are not looked after sharply, and many a ship has been degraded in character in consequence of trusting to unfaithful fasteners, who will always "*save iron*" where they can.

The frame is closely spaced, for a ship of such magnitude, which again secures the use of a proportionate increase of fastening in the outer and inner covering, in the deck frames, and also in the diagonal strappings, to be described. The frames are placed 30 inches apart. The main keel is sided 16 inches and moulded 17; and the scarphs are 8 feet long; the supplementary keel is 8 inches thick, besides which there is a 3 inch shoe. The floors are sided from 12 to 16 inches, the larger being placed amidships and the smaller at the ends; the futtocks are sided from 11 to 14 inches: the timbers of the frames are separated by 4 inch chocks, and the moulding size of frames is 21 inches at keel, 15 inches at floor head, 14 inches at first futtock head, 12 inches at second futtock head, 8½ inches at lower deck, and 6½ inches at upper deck.

The frame is diagonally strapped in reverse directions with iron plates 4½ by ¾ inches, manufactured expressly for this great ship, one set being let flush into the timbers, and the other into the ceiling, and running from the upper deck down to first futtock heads. There are 57 of these iron straps on each side, securely bolted at the ends, and to each timber which they cross, besides being riveted to each other at all the crossings.

The kelson is of extraordinary depth and strength, being much the largest wooden kelson yet introduced into ships of such tonnage. We have ever advocated an increase of kelson strength, and feel highly gratified that Mr. Webb has furnished a practical example to the world of what a wooden

kelson ought to be for ships of such magnitude as the Ocean Monarch—she would be illy entitled to her name without a *backbone* commensurate with her weight, and quite in proportion to those of smaller vessels. From a mathematical investigation we discover that huge as this noble kelson appears in its proportions and strength, it is only commensurate with the requirements of the case. After a few more ships have been built with adequate strength of kelson, and builders have experienced what it *costs* to build the same of wood, we opine that our remarks upon iron kelsons will be more generally appreciated than we imagine they have been. The kelson of the Ocean Monarch is composed of five tiers of white oak logs sided 16 inches—the lower tier is moulded 18 inches, those above it 16 inches, making an entire moulding size, or height of 7 feet 2 inches, above the floors —the whole depth from underside of keel to top of kelson is *ten feet eleven inches*—the floor timbers being let down over the keel one inch. One remarkable feature of this kelson is the extraordinary length of its logs, ranging from 54 to 67 feet; in the third tier there are only *four* lengths; each tier is scarphed, and the scarphs of the whole are judiciously shifted. The upper tier does not extend quite aft, but ends between the main and mizzen masts, and the fourth tier ends under the step of the mizzen mast, but all the tiers run to the apron forward, in this manner furnishing most strength where it is most required. There are no sister kelsons as usual—the thick garboards answering the purpose of securing the first futtock heels.

The fastening of this important line of construction is as follows: Every floor timber is bolted with copper through the keel; the *first* tier of kelson is single-bolted through the floors of alternate frames, and three-fourths the depth of main keel into it; the *second* tier is then double-bolted through the first tier, the floor, and to the depth of the first bolt into the keel at *every* frame; the *third* tier is single-bolted through the second and into half the depth of the first; the *fourth* tier is double-bolted through the third, the second, and into half the depth of the first, at distances of thirty inches apart; the *fifth*, and upper tier, is bouble-bolted through the fourth and half way into the third, also thirty inches apart. These bolts were all faithfully driven by hand. To secure this mass of timber still more effectively to the bottom of the ship, diagonal bolts were driven in pairs through the first tier, and every floor, into the main keel fore and aft. Nor did Mr. Webb stop here. To place the strength and adhesion of this oaken mas beyond the possibility of doubtful service in the day of trial, resort was l to diagonal plating on both sides of this kelson, at distances of five apart, measured at right angles. The upper ends of these iron strar bent and hooked into the upper tier of kelson, and the lower e flanged to fit the floor timbers; thus fitted, these straps are bolted floors, to each tier of kelson, and to each other at the crossings and

Besides this combination, there are diagonal braces of wood.

inches, from 25 to 30 feet long, worked against the sides of the kelson in the wake of each mast, the heels of these braces resting against the extremities of the ship; and the heads butted together under the stepping pieces, which are worked on the top of the kelson and project over it, to receive the heels of the masts, the design being to distribute the strain caused by the weight of the masts and spars, as well as the force of propulsion, and to prevent sagging. These braces are bolted to the kelson, and their heels act against each other by means of a shore between them. This improvement should be introduced in all vessels of considerable size.

The ceiling on flat of floor, is oak, 4½ inches thick, in six strakes; beyond these, a thick strake, 9 by 19 inches wide, is worked; then the floor head kelsons, which are in three tiers, 15 by 15 inches, two logs being in the bottom and one on the top of them. These tiers are thoroughly bolted to each other and to the timber of the frame. To the lower deck, the ceiling is 10 inches in thickness, edge-bolted between frames, and square-bolted through them. The floor head kelsons, as well as the midship one, are stanchioned up to the lower deck beams, kneed and secured as usual. The decks are secured to each other through the stanchions by separate tie-rods.

The bodies of the hold hanging-knees are 6½ feet long; the arms 4½ feet; moulding at throat 2 feet. There are twenty bolts and four spikes in each. The ceiling between decks is 9 inches, and is edge-bolted. The stringers of lower deck are 16 by 16; the riding piece 14 by 11; side piece 13 by 10, and let into the beam. This work is bolted both vertically and horizontally. The stringers of middle and upper decks are the same, excepting that the riding piece is one inch thinner.

The beams are arranged in order above each other in all the decks, and, except at the hatches, are spaced from 4½ to 4¾ feet apart, with six knees to each. In the lower and middle deck they are sided from 16 to 21 inches, and moulded 16 inches; in the upper deck, they are sided from 14 to 16 inches, and moulded 12 inches. She has two pairs of long pointers, with hooks between them, in the lower hold, aft, and five of the same description forward. The security of the bow is the most complete we have ever examined.

The outside planking is 5 inches thick, from the first futtock heads upward, and numbers fifty-three strakes in all; the wales are bolted edgewise. The thickness of the bottom is 4½ inches.

This ship presents almost unequalled facilities for receiving and discharging cargo, whilst her accommodation for passengers is of an improved character. The upper and lower 'tween-decks are respectively 7½ feet and 7 feet 7½ inches, amply furnished with light and ventilation. The amount of light thrown down the hatches is so great, that a person standing in the lower hold can easily read a book. Her promenade deck is very fine—a feature of prime importance in a passenger ship. She has seven hatches through

all her decks, one above another, and three great hatches to pass cargo in as many places at the same time, by the same number of gangs.

Side ventilators in the lower 'tween decks have been repudiated by underwriters; they are found to be a fruitful source of damage to cargo. The *Ocean Monarch* is not furnished with them; the upper 'tween decks, however, are free from objection to their use, and this ship is fitted with them in this locality. To ventilate the lower 'tween decks and hold, a ventilating box is constructed at the transoms, near the stern post, which communicates with the atmosphere above deck. Another ventilation box is built at the forward end of cabin, and one at midships-house on deck, while Emerson's ventilator is situated over the forecastle. The draught up these boxes is relied upon to secure all the ventilation necessary at sea.

The *Ocean Monarch* has a spacious and elegant cabin upon the upper deck, aft; there are two commodious deck-houses amidships; and the topgallant forecastle reaches 42 feet aft from the stem, embracing space sufficient to house 50 seamen. The side water-closets are placed abaft the forecastle, the deck extending over them. The windlass is worked by nipper gearing, with three sets of brakes upon the forecastle deck. It is not a patent, but a very good arrangement for the purpose—probably the best that is not covered by patent. Two strong capstans and a jigger windlass is also supplied to this deck.

There are three cargo ports on each side in the upper, but none in the lower 'tween decks. This is because the latter are so frequently found to leak and damage cargo; they are decidedly injurious to both ship and cargo. Every reasonable facility may be obtained in the upper ports. The pumping arrangement of this ship is excellent. There are two pumps forward of the foremast, two forward of the mainmast, and four bilge pumps, of the largest capacity in use; force pumps are also supplied, forward, for operating with the fire engine.

It is a singular fact that the pumping capacity, and also the pumping force of ships, are not usually proportioned to their size, and to the amount of hydraulic pressure exerted over the surface of their bottoms, as they should be. We have gone on increasing the displacement and draught of our ships, without correspondingly increasing the number and bore of their pumps, and supplying adequate power to work them in case of emergency. How many of our ships would have been lost, had it not been for the gratuitous exertions of passengers?—and how many have been lost—abandoned—having no passengers on board to call upon? Again, how many are lost for want of adequate pumping capacity, even with passengers on board? Once more, how many cargoes are damaged in consequence of not placing the pumps so as to free the hold of water at any time, or inclination caused by unequal lading or unlading? Cargo is often wet at the dock under such circumstances. Of all these things, Mr. Webb is a close observer, and he fit

vessels to meet these emergencies. The *Ocean Monarch* has four powerful capstans—two on the upper and two on the forecastle decks; the former are placed between the main and mizzen masts—one on each side. The steering gear is Reed's Patent; the rudder stock is 22 inches in diameter. She is fitted with double topsail yards, and has all the latest improvements that have been adopted for working ship. The *Ocean Monarch* belongs in the "Washington" line of Packets. She was an object of considerable interest in Liverpool, and is a noble representative of American skill in shipbuilding.

COASTING IN JAPAN.

VOYAGE OF THE VINCENNES' LAUNCH FROM SIMODA TO HAKODADI.

(*Continued from page* 287.)

It is marked on the right by a saddle-shaped hill about two hundred feet high, with an outlying flat rock. On the port hand there is a reef, on which the heavy swell breaks with great violence. It extends to the base of a sandstone bluff, bare at low water, and is covered with sea-weed, such as is used by the Japanese for food. Hundreds of people, of both sexes, were moving about on the dark and level surface, collecting it for exportation.

In making this harbor, the back country offers no mark to steer by; but the reef is well defined, and we ran in midway between it and the flat rock before alluded to, heading for the first bluff to the right of the town. There does not appear to be any danger, but the port is too contracted for large vessels.

On our approach the people began as usual to assemble, and when we had reached an anchorage astern of the junks, there were many hundreds on the shore. As the beach was lined by sharp ledges of volcanic rock, and the sea washed over them, we could not land from the launch; so we merely threw a grapnel on shore and hauled off over our anchor. We had not to wait long for a visit from the authorities of the town. In a few minutes after we had secured the boat, they came alongside in one of their large flat-bottomed vessels. The two principals were well-dressed, wearing each two swords, and their flowing robes were decorated with the insignia of their rulers; they were seated on mats in the bottom of the boat. They declined entering the launch, and seemed to be ill at ease, the chief, particularly, who trembled excessively, but a little whiskey reassured them. We found that they spoke neither Dutch nor English; we therefore had recourse to the sentences written in the Chinese characters, with English translations appended, informing them that we were in want of wood and

water, and we submitted to them also the letter explaining our purpose in thus cruising along the coast and entering their harbors. They took a great fancy to a green Bohemian glass goblet, and Mr. Kern presented it to them. The conference having continued some time, we stepped into their boat and intimated by signs that we wished to land. The chief nodded his head in token of assent, and pointed to the swords which we wore. Supposing that he wished to look at a blade, one sharp and glittering was drawn suddenly and waved over his head, when, to our surprise, he shrunk back until nearly down, extending his open hands in supplication, his eyelids quivering. Indeed, we had not before, in any of our adventures, met with so nervous a person. The seamen were amused and laughed right out. One of them exclaimed, "If he is so scared at the sight of a sword, what would he do if 'twere rammed at him?" His companions seemed annoyed; and as for him, when he recovered, he assumed an overbearing manner towards his subordinates, which did not wear off while we were there. Doubtless he was a great tyrant in his own little village. Probably he was of some rank, for several attendants waited on him, and although all our questions were addressed directly to him, he replied through a subordinate. His manner was not particularly agreeable, and it is not improbable that he mistook us for Hollanders. From his boat we stepped into another, and were carried alongside of one of the junks from which we obtained several large buckets to bring water from the spring. We then landed. The spring was about twenty yards from the shore—a square reservoir cut in the solid rock, and full of very cool and excellent water. Rising above it was a high hill covered with trees, upon its side a temple, to which led a winding path. The air about the spring was cool and refreshing, for all was buried in the shade, and boughs of trees luxuriantly clothed hung over it. While the Japanese filled our water casks we strolled along the shore at the foot of the cliffs towards the reef, whence people came bearing large bundles of seaweed. The rocks were covered with myriads of curiosities. We collected specimens of various kinds for the naturalist, then retraced our steps, and continued towards the village. We had not proceeded far when we were hailed from the boat by Mr. Berry, who told us that the officials, then engaged in copying the letter, were opposed to our going further in that direction—that they were becoming restless and impatient of our return. At the same time a venerable man* of flowing beard, clothed in a robe of green gauze worn over a ground of yellowish gray, with a purple scarf about his neck and a staff in his hand, placed himself in our way, and obstinately resisted our attempts to pass. He was deaf to persuasion, and not wishing to irritate or annoy the people, who were very kind to us, we turned back to the spring. There a little incident occurred that may be not altogether uninteresting to some, though of little importance. Standing by the

* This must have been old Mr. "FOGY," himself. We hope he is the last of his race!

the spring was a very beautiful girl, about eleven years of age. She had in her hand a vase-formed bottle of porcelain, and we made signs to her to lend it to us, that we might drink from the spring. She was, indeed, very beautiful. Her hair, jet black and glossy, was carefully dressed; her eyes, also black, were expressive and full of fire; her dark lashes and fine brows were delicate; her features were admirable, and her form graceful as it could be. As is the custom in Japan with girls of her age, her limbs were bare, so that, as she stood, we were reminded of the figures sometimes presented in those historical pictures, where a maiden is seen by the well-side. She was alarmed when we addressed her and would have escaped, but the elder Japanese called to her to explain what we wished. Turning her head, as she stepped like a roe over the rocks, with her vase pressed to her bosom, her foot tripped and she fell. Her beautiful vase was broken, and she lay motionless on the rock, wounded by her fall. As the authors of this calamity, we felt touched by pity for her, and it was with pleasure that we saw the same feeling exhibited by her companions, old and young. They ran to her assistance, raised her from the ground, and staunched the blood flowing from her wounds. We knew that the Japanese were admirers of our gilded buttons, and we resolved to make amends and dry her tears; so with one of them we went towards her. One of the old men presented it and addressed a few soothing words to her. As we expected, she ceased crying.

Thus terminated our visit to the shore, and we embarked. A quantity of green wood put up in bundles was given to us, and we prepared to depart. We offered, in return for the supplies, three of the half-dollars of the United States, but not even new and glittering as they were, would the officials receive them. Several times they were handed to the principal officer, but were as often returned by another hand. We regretted that we had not time to visit the temple. The coxswain of the launch, however, went by invitation of one of the priests. He described it as being similar to those of Simoda, but of recent construction. The Japanese made drawings of our boat which bore some resemblance to her, and they copied the letter, as well as all the papers used in conversing with them. In running into this harbor, we had carried a line of soundings. It remained to determine the position of the points and bluffs we had angled upon with our sextants, and this we proceeded to do by measuring a base line entirely across the harbor, with a patent log prepared for that purpose, and susceptible of considerable accuracy, when the boat could be given a speed of about three and a half knots. In running this line we were exposed to an unexpected danger. In order to use the oars we had lowered the weather cloths, and when we arrived off the entrance of the port, we were met by a very high, though perfectly smooth swell. The boat rolled her gunwales to the water, even somewhat under. We were forced to bring her immediately head to sea. There

was not a breath of air, and her heavy spars rendered her very sluggish in recovering. The weather cloth could not be put up without laying aside the oars, and we were too near the breakers to anchor. We therefore had recourse to the mainsail, which being immediately run up, and the sheet hauled flat aft, checked by its lateral resistance those deep and threatening lurches; the men applied their strength to the oars, and we shot swiftly out of that dangerous locality to the open sea, where a springing breeze began to ruffle the glassy surface of the water. As usual, we were followed by boats that hung near us, watching our evolutions, and probably anticipating the filling of our boat—theirs being flat-bottomed and light, rode over the swell with ease, though far inferior to the launch as sea-boats in blowing weather.

Meeting others who annoyed us by their inquisitive curiosity, we resorted once more to the revolver. They laughed and sheered off. We passed several buoys indicating fishing stations, and by them we were enabled to observe that the current was running to the eastward at the rate of two and a half miles an hour.

A cast of the lead in thirty-three fathoms gave us broken shells and rounded fragments of sand-stone—evidence of a strong current sweeping the bottom.

Not wishing to pass Cape Daido Saki without observations near it, the mainsail was reefed, and the boat hauled by the wind for the night. The coast is here characterized by bluffs of sandstone, two hundred feet in height. The strata appear to dip to the North, and presented to us horizontal lines. The land, rising from the bluffs to the height of three or four hundred feet, resembles in conformation a cross-ploughed field—small conical hills in great numbers, regularly disposed, green as emeralds, with few traces of cultivation.

In reviewing the events of the day, we were struck by the difference of treatment experienced at the hands of the people of Utsiura and those of Siro Hama. The former were far more constrained, and we could attribute it only to the presence of the officials. In fact, the authorities of Japan are bitterly opposed to intercourse with foreigners, and the idea that the *people* of Japan are not prepared for such intercourse, or that they have any repugnance to it, is entirely unfounded. It rests simply upon the assertions of the officials, who always prefer a crooked path to a straight one. Utsiura numbers about a hundred and fifty houses. During the first part of the night there was a light breeze from the south-east, but it died away and left us perfectly becalmed. The moon rose ahead like a great silver shield, and for a long time we laid awake, watching it, while the clouds and long lines of light, rode along the smooth reflecting swell of the sea. Many whales were sporting about us, and sometimes their heavy breathing, followed by the rush of the seething sea, was heard close by. It is startling to hear at

night the sudden and close roar of a blowing whale. In the morning we saw them. They were of the species termed hump-backs by whalemen. The sea was filled with small floculent specks, in strings and fragments, and an abundance of what is called whale feed or *red brit.*

It was ten o'clock before a good breeze came from the south. We then got observations for time, took angles and bearings, kept away for Daido Saki, a bluff point, and passed Kaminoto. At 21 fathoms we found the bottom composed of black sand with fragments of shells. From Kaminoto half way to Daido Saki, there are irregular bluffs of sandstone; on the northern extremity of the range, a remarkable and solitary tree; the other half is low and sweeps in with a sandy beach. At six P. M., we arrived off a bluff extending about two miles along the coast, probably a hundred feet high, presenting two clearly defined deposites—the lower one dark brown, marked by vertical gray streaks, the other light, without streaks, and of a yellowish brown color. Some portions of the lower stratum, which is equal in thickness to the other, have been washed away by the rains. So level and regular are these banks that they resemble works of art. One might easily fancy them to be great walls, and this resemblance is heightened by the verdant turf of their tops, and the inclined sides of the little ravines, which, being angular and sharply defined, at first deceive the eye into the belief that the whole is crowned by a sloping parapet, as in extensive fortifications. These remarkable deposites lie on the south-south-west side of point Oaiho Saki on Siebold's chart, off which he places an island. A small river is shown there by the chart. The country from Daido Saki to these bluffs is low and wooded, with no indications of harbors, and a few hamlets are scattered along the shore. The indentation is about four and a half miles deep. As our time was limited, we feared being embargoed with adverse winds. During the day we saw but one junk, and she was at anchor well out in the light, just south of Daido Saki. We passed near a black albatross, swimming by the side of a dead sea-bird, and fired at him. Although the ball struck by his side, he refused to rise. The white albatross is a beautiful bird, with a noble eye, large and clear, almost as expressive as that of a human being; but the black albatross, or giant petrel, has a fierce eye, and may be termed the vulture of the seas. He is frequently seen in the act of tearing to pieces and devouring the bodies of other sea birds that he has found dead upon the water, and doubtless the one we saw lingered to feast upon the bird by his side.

Approaching point or Cape Oaiho Saki from west-south-west, it slopes gradually to the sea, terminating in rocks and breakers. There is a town situated on the south side of the cape, extending to the main, where there is a sandy slope with scattered trees, and thick, level-topped groves. A large rock lies upon the shore to the west of the town. Approaching the town before a fresh south wind, we saw that all the boats were hauled very

high upon the shore, and that the surf broke heavily, so we ran to the westward towards another village lying in a bight between two bluffs. Its appearance was not more inviting than that of the first, so we stood out to sea to pass the night, reefed the mainsail, hauled the fore-sheet to windward, and rested, well satisfied with the day's work. We had made a good run, with square sail set, and had got all the data for a coast chart.

On the morning of the third of June we found ourselves about four miles from Oaiho Saki. The character of the bottom off this low coast is very different from that off the highland. It is a fine brown or blue sand, and there is less depth of water. At 7.30 we pulled away. We could not but regret that circumstances beyond our control prevented a close and accurate examination of the coast. We wished to land frequently, to collect geological and other specimens, and to choose our own good time of sailing; but the Vincennes was to wait our arrival at Hakodadi, and any delay in sailing for Behring's-straits would be an irreparable injury to the expedition. We may be so earnest as to say that we were tantalized by the sight of these unexplored fields which passed like a panorama before our eager eyes.

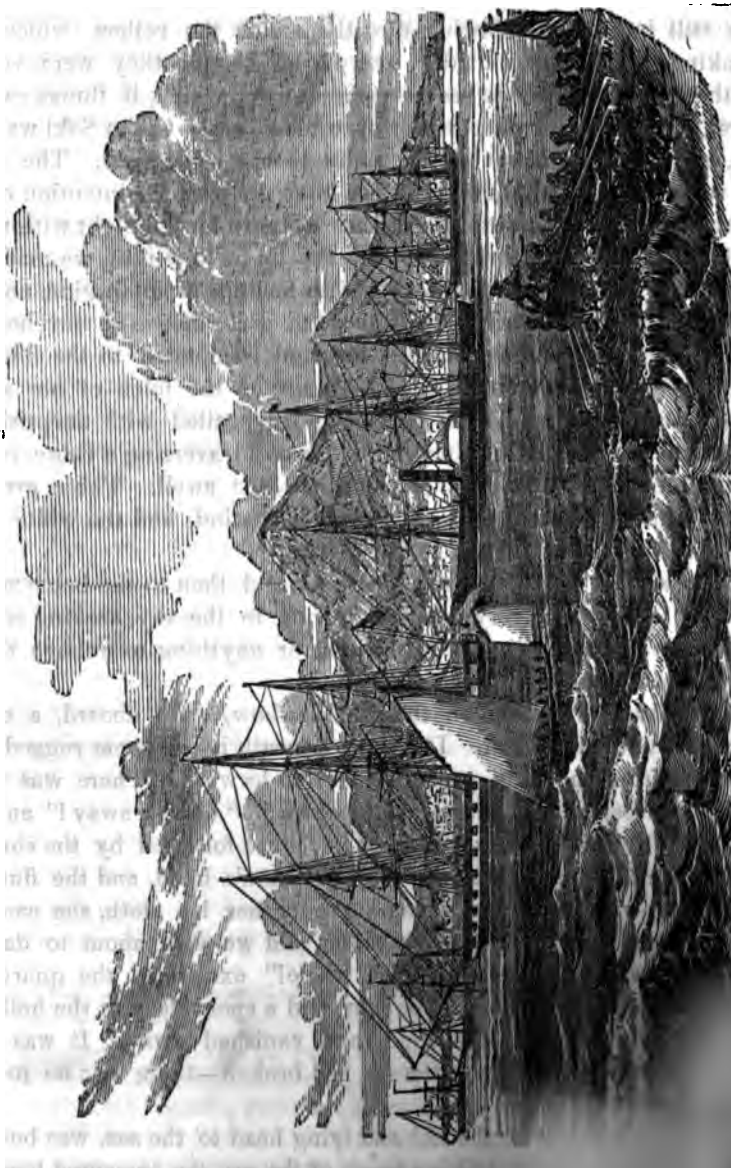
Our reflections were disturbed by a school of porpoises bounding along, and a large white albatross sweeping in lordly curves over the deep, looking down at us. Then it seemed as if the tip of his wing would touch the water, but it never did. It is wonderful to see those birds sweeping in the hollows of the waves, and over their rolling ridges. The lower wing, as they incline, seems to glide along and touch the water, but there is no ripple.

At sunrise a pleasant temperature of 68°, and the barometer at 29.93. Having brought the extreme point of Oaiho Saki to bear south, we hove-to and made observations for longitude, &c. We then saw to the northwest of the point a very large town and several junks at anchor. The point perfectly protects the road from south-easterly, and the main from westerly winds. We sounded in fifteen fathoms, and found small rounded pebbles and fragments of clam shells. The town, consisting of about five hundred houses, which were large and brightly white in the sun, presented a fine appearance. The junks were moored in what appeared to be an inner harbor formed by a reef upon which the surf was breaking. It is thus well defined. The entrance is east of the town and towards the point. We again regretted our want of time, for this port, at the mouth of a stream and in a low country, must be of some importance; probably much grain is shipped there. Without entering the harbor, a large ship will find good anchorage in the road, two or three miles from the town, and no southerly wind can reach her. On the shore of the bight, about a mile from the town, we saw a dense throng of people. We could not tell whether they were attracted by the sight of the launch or not. It is probable, however, that they were, as our sails were of a striking cut, and remarkable enough in the waters of Japan. It is singular, that although we saw so many boats hauled up on

the shore, there were very few afloat, and they all seemed to be hastening into port. About ten miles to the north-north-west of Oaiho Saki, numerous sand hills skirt the shore—the only relieving object, a single tree upon a hillock. We could not perceive the high land of the interior, although the atmosphere seemed clear. At 10, A. M., passed three junks making awkward attempts to beat to the southward, under their huge squaresails. They looked more like elephants than vessels, even to the trunk; for each Japanese junk has pendant from her stem an ornament that resembles the trunk of an elephant. While they struggled to go in one direction, we ran merrily along in the other, under all sail. At 6.30, P. M., we were again off high land, distant about six miles, and lofty mountains were visible in the interior. The wind grew light. We experienced a strong off-set from the shore. We got a cast of the lead, to which was attached an admirable contrivance for obtaining specimens of the bottom. It was constructed by the direction of Commodore Rodgers. At 40 fathoms we obtained two tenantless tubes, which were preserved for the naturalist. With this instrument, which we called the "grouper," large quantities of the bottom were always obtained. It brought up everything not larger than itself, and indeed the Commodore once secured a new species of fish from a great depth—the instrument, in descending, struck the fish and clasped him in its brazen jaws before he could make his escape. We found it invaluable, for we obtained characteristic specimens of the bottom for every section of the coast of Nyphon between Simoda and Hakodadi. In addition to the two tubes, fragments of quartz and rounded pebbles were brought up.

The appearance of the land became more interesting as it increased in altitude. We wished to follow the shore line closely, but as the bight runs far in, and we could perceive a long line of surf on the uninterrupted beach, we kept on. By so doing we were also enabled to carry our squaresail. The Bay of Sendau, which lies some distance to the north, is of more importance than any other part of the coast, and we therefore determined to run on all night. There are few important points between that bay and Oaiho Saki. Cloudy, light wind from south-east, with some indications of rain.

Morning of the fourth of June.—Light airs all the night, clouds gathering. Soon after daylight the rain began to fall. We were then off Kono Saki, and two junks were observed standing out from the land to the northward of us. The wind and rain increased, and the barometer gradually fell. Haze so obscured the land that we could scarcely distinguish its outline, even at so short a distance as half a mile. A swell set in from the south-east, increasing very rapidly, until it ran as high as our boat's mast head. We persevered in attempting to weather a rocky cape, which we supposed to be Kono Saki, and succeeded; yet we dared not approach the coast



HARBOR OF HAKODADI.

nearer than to see the breakers, which, roaring among black rocks, and mingling their spray with the haze of the atmosphere, presented a dismal picture. As no port could be made in consequence of the wind, mist, rain and sea, we stood off the land; but at 3.30, P. M., the wind from the north-east still increasing, blowing directly across the rollers, which, if once breaking, would undoubtedly overwhelm us, for they were very great, we thought it prudent to seek a position from which, if things came to the worst, we could make a port not open to the sea. Oaiho Saki was the only one, and that was about eighty miles to the southward. The wind and the rollers left no alternative, so we hove up with the intention of making what we could to the southward, then to lie-to for the night within reach of Oaiho Saki. As there remained but few hours' daylight, we made all the sail that it was possible to carry. With feelings of admiration, not unalloyed by a sense of insecurity, we beheld the performance of our boat. As if alive to the dangers that menaced her, and stimulated to the development of all her powers, she bowed to the impulse as the folds of her square-sail spread out to the wind, then gathering way, sailed with surprising swiftness, skirting the base of a mound-like wave, traversing a ridge, or darting down into the deep hollows of the south-east swell. Those great rollers were themselves furrowed by the north-east wind, and the white foam followed us in quick pursuit.

Thus we ran, hardly a word, save now and then to the helmsman—meet her! so! steady! Every eye was turned to the sky, seeking some opening in the clouds, a glimpse of the sun, or anything to relieve the murky pall that obscured it.

Suddenly there arose on the weather-bow, close aboard, a column of foam many feet in height. Doubtless beneath it was some rugged, outlying rock, far from the main, perhaps a reef to leeward. There was not a moment to be lost. The orders, "Hard down!" "Lower away!" and "Stand by to reef!" were quickly given. They were followed by the sharp crackling of the tiller, as it broke in the helmsman's hand, and the flutter of the canvas as, with the water streaming over her lee cloth, she came to the wind. Two reefs were quickly taken, and we were about to dash on by the wind, when, "A whale!" "A whale!" exclaimed the quarter-master whose keen eye searched the danger, and a spout deep in the hollow of the wave rose, writhed in the wind, and vanished away. It was indeed a whale. On his broad back the sea had broken—there was no rock or reef there.

Our boat, relieved of the sail and lying head to the sea, was buoyant and alive. Yielding to the dashing crests of the sea, she recovered herself as she settled down in the trough, and again and again rose like a feather on the foam. We cast the lead, but found no bottom at thirty-nine fathoms; and so well satisfied were we with the qualities of our boat, thus put to the long-

deferred test, that we determined to make a stand there, and to retreat no further. The sail was balance-reefed, showing nothing but the peak, the top-mast housed, the jib-boom rigged in, and all made secure. The crew crouched low, sheltered by the tarpaulin, spread from side to side, their backs, like beams, supporting it. Thus a heavy sea might have rolled over us, and yet not have filled the boat.

The sun broke faintly through, and once we could perceive, through an opening in the clouds, the fine white cirri in the clear sky above, but the driving clouds soon shut it out again. The water that we had shipped washed drearily under our feet—the pump and the bucket kept it down. We shall long remember that sportive whale and that night, for ahead, and abeam, and astern, the great rollers were roaring all the night long. At times the sea was white far round the boat, then we knew that we were upon the crest of a wave.

It rained continuously all day and all night, and we were drenched and chilled by the north-east wind. We longed for the dawn. At last the moon rose, and at four in the morning the wind and the sea moderated, and we rested. It was fortunate that the great swell rolling from the south-east was regular, and so did not assume that progressive and wrathful crest that a stronger wind would have given it.

The day dawned. The wind, dying away, came from the south, and the sea gradually subsided. The warm rays of the sun poured down upon us, and we basked in them like birds that dry their plumage on sunny cliffs.

A fire was kindled. The laugh and the jest went round, but chiefly was our good boat commended;—her speed, the way she cleared the sea, how she luffed, were all themes of admiration, and Jack declared that in her he would go anywhere. Not even the Vincennes herself would have behaved better.

(*To be continued.*)

INLAND DISASTERS IN 1856.

The *Detroit Tribune* and *Louisville Courier* respectively furnish the amount of loss from disasters on the Lakes and western rivers during the year 1856:

"The losses upon the Lakes for the year amount to over *four million dollars*, and the loss of life [illegible] In 1848, the losses were $404,880; in 1849, $[illegible] [illegible] $544,440; in 1851, $730,515; in 1852, $991,015; in 1853, [illegible] in 1855, $2,797,839."

"Boats lost by snags, 59; by burning, 23; by [illegible] by other casualties, 21—total steamers lost [illegible] loss of property, $2,637,000. In addi[illegible] forty or fifty accidents by flood, fire [illegible] damaged to a large amount in the [illegible]

[For the Nautical Magazine.]

VERTICAL TUBULAR BOILERS.

MESSRS. EDITORS:—The controversy upon the relative merits of Martin's boiler apparently closing, you suggest the propriety of raking the fires in some other boiler. If there is any real merit attached to an invention, there can be no better mode of disclosing such merit than by a free and open discussion, as we always find two sides to a question, however unimportant the subject, and the road that lies between them is more clearly marked when the lines are distinctly drawn.

Than the subject of Boilers no other is of more importance to the Marine Engineer, or more especially to the owner, who is supposed to act upon his advice. However perfect the model, or complete in all equipments, the commercial success of a steam ship is doubtless a question of dollars and cents, and all efforts with a view to economy are naturally directed to the most salient point—the extravagant use of an expensive article, or in other words, to the consumption of fuel. The urgent necessity of economy in this respect, has led to the design and recommendation of an infinite variety of form and disposition of boiler, each with its advocates claiming all the essentials of perfection.

My purpose, however, is not to speak of forms in general use, but in general terms, of a particular species of patent boiler; and I confess it seems more like digging up the remains of an antiquated delusion than dealing with something known to be a matter of fact.

By a newspaper paragraph, we are informed that there is now building in the city of Boston a "steam yacht" for an Eastern Pasha, which will be sent to Egypt as a specimen of American engineering.

Nothing is said of the ship, except that she is to be constructed of iron, and by a method entirely new. But this vessel is to be fitted with tubular boilers, of a description known as "Montgomery's Patent." I have hitherto looked upon this peculiar form as effectually exploded, like some of the boilers constructed in accordance with the specifications of that Patent; but to our surprise, it has again "turned up," and as intimated, with *further improvements.* I should like to know what they are.

I have before me a lithographic print, upon which there is a list of twenty-six boilers said to have been constructed upon this plan—two of them projected for Liverpool steamers. Of these, I am cognizant of [redacted] being absolute failures, and other boilers being substituted in their places, whilst so far as I have been able to learn, but two or three are now in operation.

How can these failures be explained, and what better can be done with this form of boiler?

There is no doubt that tubular boilers are economical, whatever may be the form in which they are applied; but in view of the present advanced

state of engineering, to place a boiler of this description on board of a vessel going to a foreign country, and then to be considered as a *specimen* of American *genius*, it appears to me, is an absurdity. If so, we can but regret the perpetration of such a humbug, unless it be accompanied with a list of failures and explosions of its predecessors of the same patent.

L'CLAIR.

JUDGE NELSON ON THE LAW OF PATENTS.

ONE of the ablest and most accurate statements of the Law of Patents may be found in the charge to the Jury of his Honor Judge Nelson, in the case of Sickels *vs.* Borden, tried in the Circuit Court of the United States, in the city of New-York, November Term, 1856. This charge also sets forth clearly and discriminately the nature of the Sickels' suit with the Bay State Company and the "Novelty Works," and defines the difficulties which inventors have sometimes to encounter in the introduction of their improvements to public favor; for these reasons we deem it worthy of publication.

The above suit was brought on a motion for injunction to restrain the proprietors of the steamer Metropolis* from using a certain "cut-off," the invention of which was claimed by Mr. Sickels, and also by the "Novelty Works," the makers of the same. The Jury having determined the merits of the controversy in accordance with law and evidence, we have no comments to offer. The closing argument by Mr. Edward N. Dickerson, for plaintiff, furnished one of the most hostile exhibitions of forensic eloquence ever known in a patent suit in this country, and was chiefly directed against Mr. Horatio Allen, of the "Novelty Works," who was charged with opposing the use of Sickels' inventions, while he endeavored to profit by the infringement of all of them.

At the close of his argument, the Court adjourned till the next day, when his Honor Judge Nelson charged the Jury as follows:

GENTLEMEN OF THE JURY:—This case having been so thoroughly examined by the learned counsel for the respective parties, I am persuaded you are already familiar with every fact and principle which are essential to an intelligent determination of it, and shall consider my duty discharged after directing your attention to the material important questions involved, divesting the case of irrelevant and immaterial matters that have been drawn into it in the course of the trial.

The first question to which your attention should be directed is the construction of the patent—is to ascertain the invention of Mr. Sickels—his discovery described in the specification, and the right to the enjoyment of which has been secured under the act of Congress. This is essential, in the first place, in order to enable you to ascertain the extent of the right under the patent; and in the second, to determine whether or not the machine

* Our readers will find the particulars of hull, engines and performance of this steamboat published in the NAUTICAL MAGAZINE, vol. 2, page 364.

or arrangement of the defendant violates this right. To aid you in the course of this investigation, it will be advisable, in the first instance, to look at the *principle* of this new arrangement of machinery, the new set of ideas involved in this discovery, and which, it is claimed, have been embodied into a working machine, and adapted to practical use. An examination of the invention in this respect, will more clearly bring out that which the plaintiff claims to have discovered and described in his patent. It is stated by the patentee, both in his patent and in his testimony upon the trial, (and there seems to be no controversy among the experts respecting it,) that previous to September, 1845, (the date of the patent,) the valve-stem, which was used for the purpose of disengaging and dropping the valve, and thereby cutting off the steam from the cylinder, was disengaged by the motion of the lifter of the valve; and that, as a consequence of this, there was a difficulty in cutting off the steam beyond the half-stroke; and, as stated by the patentee, a nice and difficult adjustment was required in order to effect the separation at that point. To remedy this difficulty, is the purpose of this improvement. The patentee gives up the lifting motion, which had before been used for tripping the valve, and substitutes in its place a motion of the engine independent of this lifting motion. In his particular arrangement described, and which is embodied in the model presented, he takes the motion from the eccentric strap at right angles to the usual valve motion, and detaches the valve by that motion—through the instrumentality of the proper machinery—by means of a vibrating sector operating upon an arm or wiper. This arrangement presents to the mind a new set of ideas, which constitutes the subject-matter of this invention. It is new, according to all the experts. Previous to this, as we have already said, the motion to trip had been taken from the lifter, and therefore it required a new development and application of power, for the purpose of avoiding the difficulty arising out of the use of the motion of the lifting-rod. This power of the eccentric had not before been applied for the purpose and object of the patentee. The novelty of the invention consists in the new set of ideas by which the patentee saw the possibility of dispensing with the lifting motion as a means of detaching the valve and allowing it to drop, and in deriving power from some other part of the engine. He took it from the eccentric strap, and adapted it to his purposes by a motion and arrangement of machinery independent of and uncontrolled by the lifting motion. The improvement, however, does not limit the patentee to the motion or power derived from the eccentric strap, for he says that it may be taken from any other moving part of the engine, always excluding the motion from the lifting-rod. That these ideas were new, was conceded by all the experts, as we understand the evidence. I agree with the learned counsel for the defendant, that the mere discovery of the fact of deriving power for the tripping of the valve from the eccentric strap, or from any other moving part of the engine not controlled by the lifting-rod, would not constitute the subject of a patent, although the idea was new; it is, however, the foundation upon which the improvement rests, and without which it would not have been discovered. The new set of ideas which of themselves are not the subject of a patent, in order to become patentable, must be embodied into working machinery, and adapted to practical use. It is this embodiment and operation of machinery for practical purposes which furnish beneficial results to the public, and render the discovery patentable. This has been effected by the arrangement of machinery which appears in the models presented by the plaintiff—the machinery worked by the eccentric strap by means of intervening arms and levers, which, acting and controlling the arm or wiper, operate to detach the valve. This combination of machinery embodied the new ideas of the patentee, and adapted them to practical use, and thus rendered them the proper subject of a patent.

Many parts of the gear or machinery necessary for working a steam engine, and which have been brought out in the progress of this trial in the models produced by the par-

ties, have no necessary bearing upon this controversy—the patent is simply for an arrangement of machinery to control the tripping of the valve. Of course, for the practical working of the machinery, it is necessary that a system of machinery or some contrivance should be interposed to take care of the valve in its descent to its seat to prevent its breaking to pieces. But that is a different arrangement in the working of a steam engine when complete. The simple detachment of the valve-stem from the lifter, is but one of several parts. The easing of the valve to its seat so as to prevent slamming or damage to the valve and the engine generally, is essential, but has nothing to do with the contrivance for effecting the detachment. Different persons may prefer different modes for easing the valve, after it is detached, to its seat. One of the several contrivances possible you saw in the machine or model of the defendant. In this machine the valve is eased down by the arm of the sector. Another contrivance (which is the favorite one of the patentee, and the one to which he refers in his patent) is the water-dash pot—a close vessel containing water, which checks the valve in its rapid descent to its seat. By the contrivance of Mr. Corlies, (which has been before this Court,) the valve is eased to its seat by compressed air. There may be many other contrivances for the same purpose. Suffice it to say that these contrivances have nothing whatever to do with this controversy: hence it is not important for you to inquire which of the several arrangements is best.

The patentee having discovered that he could trip the valve by a motion independent of the lifting motion, and therefore not controlled by that motion, it is very obvious that such independent motion may be used to trip it at *any* desirable point of the stroke of the piston, because it is an independent motion, (as was very well said by one of the experts,) a *positive* motion used for tripping; and therefore it may be used at the discretion of the engineer, or of the person constructing the machinery to cut off the steam, to detach the valve at any point of the stroke of the piston that may be the most useful. This fact led to the second claim in the patent, that by the interposition of a sector and the arms by which it could be worked, the engineer is enabled by the peculiar contrivance, to detach the valve at any point of the stroke of the piston at will, during the operation of the engine. In the progress of the trial it has been suggested, and to some extent urged by the counsel for the defence, that there was no *novelty* in this arrangement. This is a question of fact for the Jury to determine, upon a view of all the evidence in the case. The Court will not review the evidence, because all the experts called, both for the plaintiff and defendant, *conceded* that the idea of taking the power to detach the valve from an independent motion of the engine, exclusive of the motion of the lifter, was *new;* and all admitted that it was valuable. After these unqualified concessions by the witnesses for defendants themselves, it is unnecessary to enter into an examination of this question. Whether Mr. Bennet had this idea, is immaterial, since, according to his own testimony in the case, whatever improvements he devised and put into operation on the Dispatch, were abandoned, and his machinery sold for old iron, after a partial trial. After this, it were idle, and a waste of time, to follow out any inquiry respecting the organization of that machine.

The next inquiry is, whether or not the new set of ideas lying at the foundation of the plaintiff's claim, and embodied and adapted to practical purposes, has also been embodied in the model or machines of the defendant, or, in other words, in the tripping apparatus of the Metropolis. If the plaintiff's ideas have not been embodied there, there is no infringement, and the plaintiff is not entitled to recover. If they have been, then there has been an appropriation of his property, (provided his ideas have been embodied in a practical machine,) and he is entitled to your verdict.

It was urged by the learned counsel for the defence, upon the basis of the testimony of the experts, especially that of Mr. Allen, that the defendant's arrangements, connections, and combinations of machinery for tripping the valve and permitting it to drop to its seat,

must be taken together as a whole; that the entire arrangement and combination are essential for the working of the machinery, and that therefore it is not to be separated into parts, in determining whether or not it is an infringement of the plaintiff's invention. This may be taken as correct, but with this qualification: that if, in an examination of the defendant's combination, the peculiar arrangement and improvement of the plaintiff is found embodied and working there as in the plaintiff's arrangement, however it may be surrounded and combined with other machinery, the plaintiff's discovery is appropriated the same as if used alone and separate from those connections; and it will be the duty of the Jury to determine whether there is in the combination and arrangements of the defendant, any such incorporation of the plaintiff's new set of ideas lying at the foundation of his invention.

The new form of the machinery embodying the new ideas is not a material part of the plaintiff's invention, for the reason that the embodiment of his principle or ideas into working machinery, is rather the work of the skillful mechanic than that of the inventor.

Many inventors of improvements in machinery, because not mechanics themselves, are obliged to obtain the aid of skillful mechanics in embodying their principles or new ideas into practical working machinery; and different mechanics would perhaps embody them by different machinery, and by different arrangements or combinations of machinery—all, however, subject to the principles and ideas of the inventor. Hence the *mere* form of machinery must be disregarded, and the Jury must look into the substance of the arrangement and method of working, for the purpose of seeing whether the ideas of the inventor are incorporated into it. If they are, the patent is infringed.

One of the defendant's experts, an apparently intelligent engineer, inferred that the defendant's arrangement was substantially different from that of the plaintiff, because by following out the specification of the plaintiff, (which minutely described the construction of his apparatus,) he could not make the machine or the arrangement used by the defendant. This proposition is also embodied in one of the prayers of the counsel for the defence, but its unsoundness is obvious upon established principles of the patent law, which declares that *formal changes* of machinery do not evade the patent. However different, apparently, the arrangements and combinations of a machine may be from the machine of an inventor, it may in reality embody his invention, and be as much an infringement as if it were a servile copy of the plaintiff's machine. According to the patent law, if the machine complained of involves substantial identity with the one patented, it cannot be upheld. If the invention of a patentee be a machine, it will be infringed by a machine which incorporates in its structure and operation the substance of the invention, that is, by an arrangement which performs the same service or produces the same effect in the same way, or substantially the same way.

In a case before the King's Bench in England, Chief Justice Tindall made the following observations, with every word of which I agree:

"Where a party has obtained a patent for a new invention or a discovery which he has made by his own ingenuity, it is not in the power of any other person *simply* by varying in form or in immaterial circumstances the nature or subject-matter of that discovery to obtain either a patent for it himself, or to use it without the leave of the patentee, because that would be in effect and substance an invasion of his right." The Chief Justice therefore says to the Jury: "What you have to look at for the present occasion, is not simply whether in form or in circumstances that which has been done by the defendants varies from the specification of the plaintiff's patent, but you are to see whether in reality, in substance, and in effect, the defendants have availed themselves of the plaintiff's invention in order to make that fabric which they have sold in the way of their trade."

One machine is the same in substance as another, if the principle be the same in both. The form of the machine may be different.

Lord Chief Justice Gibbs says:

"I remember that was the expedient used by a man in Cornwall, who endeavored to pirate the steam engine. He produced an engine which, on the first view of it, had not the least resemblance to that of Bolton & Watt, who were the patentees. Where you looked for the head you found the feet, and where you looked for the feet you found the head; but it turned out that he had taken the principle of Bolton & Watt. It acted as well one way as another; but if you set it upright, it was exactly Bolton & Watt's invention. I make this observation because I observe it is stated that one acts upwards and the other acts downwards. One commences from the bottom, and produces the lace by an upward operation. The other acts from above, and produces it by an operation downwards."

But the Chief Justice says, that if the principle be the same, it must be considered the same invention. These are the principles by which the Jury will be guided in an examination of the contrivance of the defendant, which is claimed to be an infringement, and to embody the new ideas, the principle, the method of working, which is to be found in the arrangement of the machinery of the patentee. As the Court has already said, after a principle has been discovered, after a new set of ideas have been struck out by genius and thought, as in this case, their embodiment in machinery, their adaptation to the working out of practical results contemplated by the inventor, is very much the work of the skillful mechanic. And any man in the field of discovery, after becoming acquainted with the ideas of an inventor, might in many cases work them out in a manner and by machinery very different from the arrangement preferred or used by the inventor, but his merit would be far less than that of the pioneer who had explored and developed to the community all that was new and valuable, as in the case before us, the use of a motion independent of the motion of the lifter, for the purpose of detaching the valve.

It will now remain for the Jury, in view of all the facts in the case, and in view of the general principles which the Court has endeavored to explain, to say whether or not the plaintiff's invention, in substance, is to be found incorporated in the arrangement and combination of the defendant. If it is, it will be their duty to find a verdict for the plaintiff; otherwise for the defendant. The only question remaining for the consideration of the Jury, is that of damages. There are two modes of arriving at these in the case of an infringement.

If the patentee has an established price in the market for a patent-right, or what is called his patent-fee, that sum, with the interest, constitutes the measure of damages. If the patentee has not any established price for a patent-fee, then you are to inquire as to the loss or injury which he has sustained by reason of the infringement, and, as stated by the counsel, the profits which the infringer has made by the use of the invention of the plaintiff, may be taken as the measure of damages. Of course, the defendant cannot complain of that, because, if in fact he was an infringer, he has been using the property of the plaintiff, and whatever profits he has made out of it, belong in equity to the owner. It is a question here, whether or not there has been an established patent-fee for this improvement proved by the evidence. There is evidence that the patentee sold one of his patent-rights in Philadelphia, for $250, and that he sold another in Baltimore, for $500. He sold several rights to the Government, at the rate of $12.50 per cubic foot, which, if applied to the Metropolis, upon the evidence, would amount to about $9,000. As it respects the $250 and the $500, you have the explanation of the patentee himself. His object in selling at such prices, he says, was to get the invention into public use, and that he made sacrifices of what he deemed its real value on this account, that the public might see the successful working of his improvement. Undoubtedly this circumstance is not peculiar to the plaintiff—this account is perhaps the history of most inventions on their first introduction to public notice and use. It requires effort, influence, and sacrifice on the part of the in-

ventor, to introduce them to the public notice, so that they may acquire the confidence of the community. The public are distrustful of new inventions, and rightfully so: not one out of one hundred issued at the present day is worth, in my judgment, the parchment upon which it is written. It is only now and then a valuable improvement is produced, and it soon becomes the subject of litigation and contest; and even the most meritorious require time, effort, influence, and sacrifice of money, to bring them to the notice of the public. And it is quite proper that these views should be taken into account upon the question of the patent-fee. If the Jury are satisfied that it was sold less than the real value of it, upon the views stated by the patentee, and that sacrifices were made for the sake of introducing it into public use, these considerations should be taken into the account in case of determining the measure of damages by the patent-fee. It is important that the Jury should take into account the fact that if they adopt the price of the patent-fee, whatever they may determine that fee to be upon the evidence in the case, it will operate to vest the title of the patent to the extent of its use in the Metropolis throughout its term; and they should state whether they adopt the patent-fee or the profits from the use of the inventions as the measure of damages; for in the former case the title passes, and in the latter case it does not pass, and your verdict will be for a compensation for the use of the invention during the sixty days' use before the suit.

The Court has considered the several prayers of the learned counsel for the defence, and has given what instructions are deemed to belong properly to the case; and those not given in accordance with the prayers, may be considered as overruled, or regarded as irrelevant.

The Jury retired after the charge of the Court, and returned a verdict of $720 damages for sixty days' use of the patented improvement on the steamer Metropolis. This sum was adjudged as the *profits* from the use of the invention for the above period.

ON TREE-NAILS AND TREE-NAILING.

RECENT observations in the Dry-Docks of New-York have convinced us that a few remarks on the above subject will not be ill-timed. We are surprised that shipbuilders are not more careful of their reputation than a few of them appear to be, who suffer the tree-nailing of their ships to be but *half done*. The re-treenailing of a new ship upon a dry dock affords one of the most unsightly, and we may add, shameful, exhibitions of mechanical depravity known "along shore." Hundreds of passers-by inquire, "Who built this ship?"—"Where does she belong?" We have heard the answers in a recent case of this kind—"She was *pegged together* down-east"—"Belongs to Boston." "The owner says he built her for his *own son*. We wonder what kind of work he would put off upon a *stranger!*" It is exhibitions like this that blackens the character of shipping from quarters where we know there are as good ships built as ever sailed.

The ship alluded to was re-treenailed in consequence of discovering that the work was so badly done that three treenails out of four in a frame were driven only three or four inches into the timbers. This was found to be the

case in cutting out a short piece of plank for repairs. The surveyors decided that the new copper must be stripped off, and all the treenails (which were of inferior quality) be backed or bored out, and locust driven in their places. This was done at underwriters' expense, the ship having been on shore with full cargo on board. The pumps which may be heard working at unseasonable hours, in port, often tell tales of defective tree-nailing which should make builders blush. Job work and low prices have led to dishonest workmanship, and these, again, have re-acted upon prices until the fastening off of ships has become entrusted to irresponsible men in many yards, who are not well looked after by the foreman, chiefly for the reason that "it don't pay to be so particular."

The tree-nailing of a ship is a part of the work which is just as important as any, while it is notorious that it is now most likely of any to be slighted. Owners and underwriters would do well to consider the difference between *pegging* thick plank to the timbers, and tree-nailing them quite through, and wedging on both ends. Bad work is done in the following manner: The ceiling being worked before the planking, and square fastened, there is necessarily a great number of "iron" or short holes made in the latter, going little or no distance into the timber; many of these are sometimes purposely made by the hole-borer—some being only *sham* "iron holes" at that. These hole-borers are generally paid by the score, in number, and before *crank augers* came into fashion they done better work—now they figure for a "fortune" on every job. The tree-nails shaver comes next. He likes to buy his own stock, and finds it cheaper to fit small ones (in the rough state) than those having size enough to fill the holes—having only to take the corners off. He fits them badly—either tapering from head to point, or shaving them slack in the middle of their length, thus giving them drift only at the ends, whereby they hold nothing, comparatively. The head is made of extra drift, and in driving up, the plank is frequently checked, while the hole is not filled for *half its length*. Treenails that are the worst driven check the plank most. A boy need not work long on the stages to discover that a treenail of such large drift as to check the plank on entering cannot be driven quite up to the mark; it is the last two or three blows that do the mischief, and lead the uninformed to think that the work is only a little "extra well done." Treenail rents, like those from bolts, are the most difficult to make tight—especially so in soft covering.

But there is still another source of defective workmanship. The treenail drivers—often the most worthless men in the yards, even if the hole be through bored, and the treenails well fitted—sometimes slight their portion of the work. In dry-docks cases are met with where the holes are through, and the tree-nails well fitted, but only driven a few inches into the timber. We do not approve of *round* tree-nails. The best form for every purpose is eight-square, whether hand or machine made.

We will now indicate how holes should be bored, and treenails be prepared and driven. However simple these operations may be supposed to be, we are persuaded there are some persons connected with them who have something to learn respecting the same.

It is said that a certain builder abroad taunted a New-Yorker, saying: "You don't know how to drive tree-nails in New-York!"—"they go slack half the way!" "Indeed," replies the other, "they may have been *two-drift* tree-nails which you saw driven in New-York—that is one point of their excellence." "A *two drift* tree-nail!" rejoins the first party; "what new humbug is that?" "Neither "new" nor a "humbug." Have you grown grey amongst the chips of a shipyard, and not learned that long tree-nails could be best driven with two drifts instead of one—the hole being bored with two augers, of different sizes, instead of one?" "I never heard of it before."

Mr. Isaac Webb, well known in past time as one of the leading shipbuilders of New-York, was the first to test the merits of this invention. Tree-nails of this pattern can be driven $\frac{1}{32}$ to $\frac{1}{16}$ inch larger than any others in the same sized hole. They fill the hole from end to end when driven, although they necessarily enter it slackly at first. They hold better, and cost less for driving, and what is most important, seldom check the plank. Ships properly tree-nailed in this manner turn out creditable to builders, profitable to owners, and popular with underwriters.

Within two or three years steam machinery has been perfected for manufacturing tree-nails on the two drift principle, and several of the shipbuilders of New-York prefer them to any other. Wm. H. Webb has used them exclusively for more than two years, and other builders for two-thirds of that time. The works are at Jersey City, N. J., where tree-nails of all sizes and lengths are made from the best locust grown in the country. The patent is Fitzgeralds', and it is calculated to confer immense benefits upon the tree-nailing of ships, by producing a superior article for least cost. Abm. Hoagland is proprietor of the Jersey City Tree-nail Factory, to whom orders should be addressed. The operation of eight-squaring and fitting the square tree-nail is performed with cross-cutting rotary knives, which take off the corners and leave the sides of the tree-nail slightly concave, and roughened, thus very materially increasing the friction, and ensuring the utmost holding power. It is almost impossible to drift out one of these tree-nails when properly driven. Augers are made for them which hold their size until worn out, so that it is not necessary to alter the gauge of the machine to suit the wear of auger as formerly. Faithfulness in workmanship might be restored at no increase of cost by using tree-nails such as we have described. Inspectors, look sharply after the tree-nails, and see that they are not driven from both inside and out in the same holes, and that they do not check the plank, and are properly wedged on both ends.

ORIGIN OF THE UNITED STATES NAVY.

INCEPTION OF THE NAVY OF THE UNITED STATES—INSTRUCTIONS OF WASHINGTON TO THE COMMANDER OF THE FIRST ARMED VESSEL SAILING UNDER THE AMERICAN FLAG.—At the opening of hostilities between the Ministerial and Continental forces, in the summer of 1775, the want of a navy was severely felt. The enemy's troops at Boston were obliged to obtain nearly all their supplies by sea—the forces under Washington cutting off everything from the country. The idea occurred to the sagacious mind of the Commander-in-Chief that a few small armed vessels might render the cause essential service by cutting off the enemy's supplies, and intercepting the Ministerial despatches. Congress, on the request of the Commander-in-Chief, fitted out the following named schooners, and Washington issued instructions to the commanders, who already bore commissions as captains in the army:—The Harrison, Capt. Coit; the Lynch, Capt. Boughton; the Lee, Capt. Manly; the Warren, Capt. Adams; the Washington, Capt. Martindale. These vessels went to sea in the months of September and October, 1775, and all did good service except the Washington, which was taken by the enemy.

The fitting out of these vessels may be considered the origin of the United States Navy. Too much cannot be said in praise of the gallantry and devotion of the officers and men who worked this little squadron. The land service was exceedingly perilous, for the army had the advantages of a country generally friendly, and of a thousand lurking places unknown to the enemy. But the infant navy was composed of small vessels, badly equipped, always short of supplies and scant of ammunition. To it was opposed the greatest navy in the world, with the further risk that had our men fallen into the hands of an enemy disposed to pursue his victim, they might have been at once hanged at the fore yard-arm. The names of these patriots should ever be held in the most grateful remembrance. They preceded the gallant John Paul Jones, who is generally considered the founder of our navy, and whose great deeds inspired the men who followed Decatur and Hull, and Stewart and Perry, into many a desperate fight, where victory crowned our eagles.

Our historians have generally slighted the claims of the gallant founders of our navy, and the purpose of this article is to remedy this defect in part. A surviving relative of Captain Coit has placed in our hands a cop[illegible] instructions issued to that officer by the Commander-in-Chief, and [illegible]duce it, with some account of the gallant commander's services.

At the breaking out of the war, Capt. Coit was quietly enga[illegible] practice of law at New-London, Connecticut, then, as now, disti[illegible] the industry, liberality and patriotism of its citizens. The fight at Lexington aroused Connecticut to arms. The Legisl[illegible]

raise six regiments of one thousand men each; Capt Coit volunteered on the 20th of April, and immediately attained the command of a company. His company formed a part of the Connecticut troops led across Charlestown neck, under a galling fire, by General Israel Putnam, which reserve was in time to participate in the battle of Bunker Hill. The name of Captain Coit is honorably mentioned in the records of that action. It was shortly after this affair that Captain Coit was appointed to the command of the Harrison, and received his instructions as follows:—

(Copy.)

INSTRUCTIONS TO CAPTAIN WILLIAM COIT, COMMANDER OF THE ARMED SCHOONER HARRISON.

1. You being already appointed a captain in the army of the United Colonies of North America, are hereby directed to take the command of a detachment of said army and proceed on board the armed schooner Harrison, lately fitted out and equipped with arms, ammunition and provisions, at the Continental expense.

2. You are to proceed, as commander of said schooner, immediately on a cruise against such vessels as may be found on the high seas or elsewhere, bound inwards or outwards to or from Boston in the service of the Ministerial army, and to take and seize all such vessels laden with soldiers, arms, ammunition or provisions, for or from said army, or which you shall have good reason to suspect are in such service.

3. If you should be so successful as to take any of said vessels, you are immediately to send them to the nearest and safest port to this camp under a careful prizemaster, directing him to notify me immediately by express of such capture with particulars, and there to wait my further directions.

4. You are to be very particular and diligent in your search after the letters or other papers tending to discover the designs of the enemy or of any other kind, and to forward all such to me as soon as possible.

5. Whatever prisoners you may take you are to treat with kindness and humanity, as far as is consistent with your own safety—their private stock of money and apparel to be given them after being duly searched, and when they arrive at any port you are to apply to the committee or any officer of the Continental army stationed at such port, for a guard to bring them up to headquarters.

6. For your own encouragement and that of the other officers and men to activity and courage in this service, over and above your pay in the Continental army, you shall be entitled to one-third part of the cargo of every vessel by you taken and sent into port, (military and naval stores only excepted, which with the vessel and apparel are reserved for the public service,) which said third part is to be divided among the officers and men in the following proportions:—

Captain, 6 shares.	Steward, 2 shares.
First Lieutenant, 5 do.	Mate, 1½ do.
Second Lieutenant, 4 do.	Gunner, 1½ do.
Surgeon, 4 do.	Boatswain, 1½ do.
Ship's Master, 3 do.	Gunner's Mate and Sergeant, 1½ do.

Privates, each, 1 do.

7. You are particularly charged to avoid any engagement with any vessel of the enemy, though you may be equal in strength or may have some small advantage, the design of the enterprise being to interrupt the supplies of the enemy, which will be defeated by your running into unnecessary engagements. In this your own discretion and prudence must govern.

8. As there may be other vessels employed in the same service with yourselves, you are to fix upon proper signals, and your stations being settled, so as to take the greatest range, avoid cruising on the same ground. If you should happen to take prizes in sight of each other, the rules which take place among private ships of war are to be observed in the distribution of the prize money.

9. In case of re-taking the vessel of any friend to the American cause, I will recommend it to such persons to make a suitable compensation to those who have done such service; but such vessels must be deemed as coming within the directions respecting other vessels.

10. You are to be extremely careful and frugal of your ammunition, by no means to waste any of it in salutes or for any purpose but what is absolutely necessary.

G. WASHINGTON.

HEADQUARTERS, Oct. 22, 1775.

These instructions are commendable for their clearness and perspicacity, while at the same time the prudence and economical sagacity of Washington are plainly evidenced in them. Capt. Coit took several prizes and rendered the most essential service to the republic; he declined to receive pay for his services and expended his private fortune for the cause. Such men deserve the highest place in the list of our country's heroes.—*N. Y. Herald.*

HARBORS AND COMMERCE OF PORTS ON LAKE MICHIGAN.

MILWAUKIE.

THE existing appropriation for this harbor is applicable, exclusively, to the improvement to be made at the point called the "North Cut," or the "Straight Cut," which is 3,100 feet north of the present harbor piers. The plan for this new work, as it has been approved by the Department, provides for two parallel piers, 260 feet apart, projecting on a course of North 81° East, *magnetic*, which is nearly perpendicular to the lake shore, until a depth of 12 feet of water be reached.

The length for the piers for the new harbor at the "North Cut" is to be about 800 feet. The width of the peninsula, at the point where the cut is made to unite the Milwaukie river with the lake, is about 200 feet. The abrasions and accretions upon the lake shore make the shore line variable from time to time.

On the 9th of May, 1854, the city authorities of Milwaukie, under an act of the State Legislature, authorizing an appropriation for that purpose, let the contract for the building of the harbor at the site designated by the Government appropriation of 1853 as the "Straight Cut," and ostensibly complied with the requirements of the decision of the honorable the Secretary of War, applicable to cases of joint expenditure of Government and municipal or individual funds for public works, of date June 4, 1853. The contractor, however, proceeded but slowly upon the work of dredging during the summer of 1854, and in May, 1855, signified his intention of

abandoning the contract or of assigning it to other parties. An assignment was finally perfected in July, 1855, (with the consent of the city,) to C. D. Barton, Esq., by whom the work, during the remainder of the working season, has been prosecuted.

The contract provides for the construction of the pier work, the docking and the dredging of the channel, from the river to a point 700 feet into the lake, which distance reaches a depth of 10.5 feet water; the work to be done in accordance with the Government plan, and under the superintendence of the United States officer or agent in charge of the work at this place.

Amounts required to be appropriated for Milwaukie harbor:

To complete the fourth section at the "North Cut"	$22,506 50
To complete the first, second and third sections, in addition to the city appropriation	27,444 21¼
For repairing and dredging the present harbor at the mouth of Milwaukie river	23,784 26
For meteorological instruments	232 50
Total required, in addition to balance of former appropriation for Milwaukie harbor	$73,967 47¼

If, in addition to the improvements above estimated for, Commercial Bay, having an area of two hundred and seven thousand seven hundred and eighty square yards, equal to a space of six hundred yards long by three hundred and forty-six yards wide, (600 by 346 yards,) were improved, by dredging it to a depth of twelve feet, Milwaukie harbor would then be in a proper condition to accommodate the extensive local commerce of this port, and also to answer the requirements that are constantly made upon it to afford refuge and anchorage to the shipping engaged in the general commerce of the lakes during times of storm and peril. The loss of shipping and of human lives near this harbor, during the past stormy season of navigation, was great, and shows how much may be done to save the lives of mariners and shipping, in future, by the expenditure of a less sum than the revenue on foreign importations received at this port, and paid into the public treasury, in the year 1855 alone. The cost of dredging out this bay is not estimated for now, because the survey of the harbor gives no information of its present depth. We have not, therefore, the requisite data for the estimate. The condition of the present harbor requires immediate attention, to prevent its becoming closed against the most useful class of vessels that ought always to find easy ingress and egress to and from it. The appropriation last made confined the expenditure of its whole amount exclusively to the construction of the new harbor, at the "North Cut." On the opening of navigation in the spring of 1855, the condition of this harbor was found to be much worse than it was the autumn preceding.

In regard to the importance of keeping up the harbor at the natural en-

trance of Milwaukie, I agree in opinion with the Board of Topographical Engineers expressed in their reports to the bureau of May 28, 1843, and March 4, 1854.

The reasons adduced in favor of this opinion in the first mentioned report are, in my opinion, very forcible.

They are based upon the primary principle upon which appropriations from the public treasury for works of this kind are sustained, namely, for the benefit of the commerce of the United States generally, rather than for any particular locality.

If the harbor entrance at the natural mouth of the river were neglected and allowed to fill up, the great extent of roadstead which is offered, by a little improvement, to commerce generally, between this mouth and the point fixed for the new harbor, would also soon be lost. In addition to the distance of four thousand feet (or more than three-fourths of a mile) of the river bed, having an average width of full four hundred and fifty (450) feet, and depth of water enough for the passage of the largest class of lake vessels, there would be lost to the general lake commerce as a necessary roadstead in times of severe storms, (when many other vessels than those belonging to this port solely are entitled to refuge and protection here,) the valuable anchorage room afforded, with a little improvement, by Commercial Bay.

The statistics of the commerce of Milwaukie, hereto attached, viewed in connexion with the improvements now in progress, which must in a very few years greatly increase her commerce, present to my mind convincing proofs that she would be blind to her own interests, and to one of the chief means of promoting her prosperity, were she to abandon the policy of preserving these roadsteads.

I believe the day is not distant when it will become necessary to improve Commercial Bay, as a place of refuge and safe anchorage for the lake shipping in times of peril, not only by deepening it, but also by enlarging it by dredging out a portion of the surrounding marsh.

The natural advantages are so few on this lake for creating harbors of refuge, without the great expense of outward breakwaters, that when they are found, as in this instance, near at hand, they should be taken full advantage of. It would be exceedingly unwise to turn aside from them and to go on counting annually the thousands of human lives, and the millions of treasure, lost for want of the accommodations to shipping which they offer.

In case a naval depot should be established by the United States on Lake Michigan, for the repair and equipment of armed vessels, the advantages offered by Commercial Bay as a roadstead, easily extended to any required capacity by dredging out the surrounding marsh, would give Milwaukie a strong claim to consideration in selecting a site for such an establishment.

Milwaukie is the chief port belonging to the Milwaukie district for the entry and payment of duties on foreign importations. There is a collector of customs stationed here. There is a coast light-house here, which bears north 14 deg. 50 min. west, and distant two thousand seven hundred and ten yards, or say $1\frac{1}{2}$ miles from the north extremity of the north pier of the present harbor or mouth of the Milwaukie river.

The population of the city of Milwaukie was, by census taken in June, 1855, 30,443. It is rapidly increasing, both by native and foreign immigration, as well as by natural causes of increase; and it is now (December 31, 1855) estimated at 34,000.

The enrolled tonnage belonging to this district, at this time, consists of two barks, nine brigs, eighty-one schooners, one steamer, two sloops, and four scows (so called) or large lumber three-masted vessels. Total, ninety-nine vessels, amounting to $18,229\frac{76}{95}$ tons.

The number of arrivals and departures at and from this port, from March 1 to December 31, 1855, was 5,004.

The total tonnage arriving and departing during the same period, was 1,481,400 tons.

Average daily tonnage arriving and departing in the same period, 4,841 tons.

Average number of vessels arriving and departing daily during the same period, $16\frac{1}{3}$ vessels.

The amount of duties on foreign importations collected at this port for the year 1855, $173,130; or, at the average rate of $474.32 per day throughout the year.

The value of the imports to this port, domestic and foreign, during the year 1855, was as follows, viz:

IMPORTS.

By lake shipment	$18,860,298 50
By the Milwaukie and Watertown Railroad	1,588,670 12
By the La Crosse and Milwaukie Railroad	340,740 01
By the Milwaukie and Mississippi Railroad	5,408,324 31
Total value of imports to Milwaukie in the year 1855	$26,198,032 94

EXPORTS.

By lake shipment	$14,802,891 66
By the La Crosse and Milwaukie Railroad	1,150,425 75
By the Milwaukie and Mississippi Railroad	11,420,324 50
Total value of exports from Milwaukie in the year 1855	$27,373,641 91

The value of that portion of the above imports and exports which passed over St. Clair flats was, in the year 1855, $22,804,443.83.

The value of the manufactures in the city of Milwaukie, in the year 1855, was $5,650,412.

SHEBOYGAN.

This harbor was one of the first to receive my special personal attention after my assignment to duty as the superintending engineer of the Lake Michigan harbor works. It was on the 20th of April, 1854, that I entered upon these duties, and on the 26th of that month, having in the meantime completed the necessary examinations of Milwaukie harbor, I made a minute examination of the piers and of the condition of Sheboygan harbor. I personally sounded out the channel between the piers and over the bar, and found not less than 8½ feet on any part of the bar at the harbor entrance. The 8½ feet bar was very narrow, and but little dredging was necessary to give a clear channel of 10 feet over the bar and all the way up between the piers. These piers are not the property of the United States. They were built out of a fund raised by the people of the city and county of Sheboygan.

Although an appropriation was made by Congress in the year 1852 for the improvement of this harbor, yet it could not, under an existing law, be expended for that purpose until the removal of an impediment in regard to a proper title to the United States, conveying the possession and jurisdiction over the site for the construction of the work. Supposing that deeds of conveyance to the United States from the present proprietors of the existing piers would be sufficient to remove all impediments, and thus allow the appropriation to be expended in the further improvement of this harbor, this course was adopted, and the deeds from the city and county authorities were duly executed and placed at my disposal. They were transmitted to the Topographical Bureau with my report of September 9, 1854. The decision upon them was, that the War Department had no authority to accept the cession of jurisdiction over the piers erected by the town or other corporate authorities. Under this decision I could not lawfully expend the appropriation upon the general repairs of the Sheboygan piers, because they did not become the property of the United States. I was confined in the operations here to the mere adjustments of the extremities of the two piers, so as to place them in a proper condition for the commencement of an extension of them by the United States whenever such a step should be decided on. My instructions to Agent Newland, of September 29, 1854, were therefore confined to that object.

The decision of the bureau upon the proposition contained in my report of June 24, 1855, added to the previous decision of the War Department, leaves me no ground for expending any part of the government appropriation upon the Sheboygan piers, or in extending them further out into the lake, unless legislation by Congress shall specially authorize the acceptance by the United States of the cessions of jurisdiction proffered. I presume, however, that it will be lawful to expend a portion of the governm

appropriation in deepening the channel over the bar and between the piers by dredging; and I propose to do so the ensuing season if it meet the approbation of the bureau and the War Department.

The river being a public highway, navigable for vessels of over 20 tons, and hence being under the jurisdiction of the United States for all purposes connected with the general commerce of the country, and dredging being one of the objects provided for or contemplated in the act of appropriation, I suppose there can be no objection under the laws to the dredging.

Sheboygan is a port of delivery for foreign importations. There is a deputy collector of custom duties stationed here. The port belongs to the district of Milwaukie. There is a coast light-house situated about a mile northward of the harbor entrance on the elevated bank of the lake shore.

The enrolled tonnage belonging to this port on the 31st of December, 1855, consisted of one brig and three schooners, measuring, all together, 577 tons.

The number of arrivals and departures to and from this port, from March 1, to December 31, 1855, was 1,598; or an average per day, during that period, of 5.

The total amount of tonnage which arrived and departed during that period was 489,600 tons; or an average per day, during that period, of 1,800 tons.

It consisted of vessels of from 10 to 450 tons burden.

The amount of duties collected on foreign importations at this port during the year 1855 was $3,975.60.

The value of the imports, both domestic and foreign, at this port during the year 1855 was	$6,749,461
The value of the exports from this port during the year 1855 was	1,103,564
Total value of imports and exports of Sheboygan in 1855	$7,853,025

The value of that portion of the above imports which passed over the St. Clair flats in coming to Sheboygan was $5,159,598.

The value of that portion of the above exports which passed over the St. Clair flats was $496,789.

An expenditure of $43,314 will be necessary to complete the harbor of Sheboygan.

The channel way between the piers is now only 175 feet wide. This is not a sufficient width for the accommodation of shipping lying alongside of the piers to receive or discharge freight where the warehouses are situated, and for a free passage up and down the channel besides.

Moreover, vessels aiming to enter so narrow a harbor, under a strong northerly wind, or gale, if bound in from the northward, are often unable to luff quick enough to do so, with so little sea room. They are frequently, therefore, carried to leeward, past the harbor entrance entirely. I would recom-

mend, in the extension of the piers of this harbor, that a width between the piers of at least two hundred and forty (240) feet should be at once assumed by obliquing the three first cribs of the south pier, so as to gain the increased width of sixty-five feet. Then to resume the parallelism with the north pier on its present course. The river for some distance above the piers is full three hundred (300) feet wide, and its downward current would, I am sure, afford the necessary scour for the channel way with this increased width between the piers. Unless this be done, I believe it will be much regretted by the commercial community in future years.

The statistics of the trade of Sheboygan shows that this port has already attained a high rank among the growing commercial ports of Lake Michigan. She already supplies an extensive back country with the requisite articles of importation for consumption, and receives in return a large amount of agricultural products for exportation. One or two railroads are in contemplation from Sheboygan to traverse the rich country to the west, and she has a very fair prospect of increasing her commercial importance so as to require a good harbor, easy of ingress and egress, for the largest class of lake vessels. It is also contemplated to extend the Lake Shore Railroad (which now runs between Chicago and Milwaukie) to connect Milwaukie with Sheboygan, a distance of about fifty miles.

MANITOWOC.

In my general report to the Topographical Bureau of April 29, 1855, the work for the improvement of this harbor was mentioned as follows, viz:

" Under your instructions of the 27th of April, 1854, the position and direction for the piers for the improvement of this harbor, in accordance with the approved plan, were marked out by me upon the locality designated, and proposals were immediately invited for the necessary materials for construction. Owing to the failure of the first contractor for supplying the necessary timber, a delay was caused of about one month in commencing the work. A new contract was made (with other parties) and was fulfilled, and the work of constructing the cribs was begun on the 10th day of July, 1854, and continued until the close of the working season. Seven cribs, each 30 feet long and 20 feet wide, have been sunk in position and filled with stone. Two of these are upon the north side, and five are upon the south side, making the length of the north pier at present 60 feet, and the length of the south pier 150 feet, with a width of channel between them of 212 feet.

The funds appropriated for this harbor are all expended. There is dressed timber enough on hand at Manitowoc to build the cribs up to the desired height above the water level. There are also iron and stone enough on hand to be used in thus completing them. (A pile-driver and stone scow also belong to this harbor.)

It is very important to the agricultural interests of the country west of Manitowoc, and between that place and Green Bay, that this harbor should be completed, by extending the piers out to twelve feet depth of water in Lake Michigan, in accordance with the approved plan. To do this will require that the north pier be extended 864 feet, and the south pier 768 feet, according to the best reconnaissance I was enabled to obtain. This will require the addition (for both piers) of 1,632 feet of pier work, in an average depth of eight feet water; or the construction of 51 cribs, each 32 feet long by 20 feet wide, and 13 feet average height from bottom to top.

Manitowoc river throws down a large volume of water, during its high freshets, into Lake Michigan—sufficient, it is believed, to scour a channel between the piers 240 feet wide. This was represented in my general report of August 19, 1854, and that width was recommended to be adopted for the channel way between the piers, in lieu of 200 feet previously decided on. This recommendation was acceded to, but before information to that effect reached this office, both piers had already been commenced at the previously determined width apart.

For reasons similar to those given in reference to Sheboygan harbor, I recommend, that in extending the Manitowoc piers, a width of channel of 240 feet be immediately assumed, by obliquing the three first cribs to be added to the south pier, so as to gain the additional width necessary for that purpose; and that the south pier be afterwards prolonged in a direction parallel to the north pier.

Besides the pier extensions, dredging will be required between them and over the bar at the harbor entrance, in order to give a channel of 12 feet, as follows, viz: light sand to the amount of 12,500 cubic yards; a harder mixture of clay and sand 6,200 cubic yards.

I herewith submit an estimate for these improvements, including also an item for meteorological instruments, which calls for an appropriation for the improvement of Manitowoc harbor of $62,730.92.

Manitowoc is a port of delivery for foreign importations, and belongs to the Mackinac district. A deputy collector is stationed here. There is a coast light-house here, situated within the town, on the high bank of the lake shore.

It bears north 35 deg. 10 min. west, and is distant 125 yards from the harbor entrance.

The enrolled tonnage belonging to this port on the 31st of December, 1855, consists of five schooners, amounting to 755 tons.

The number of arrivals and departures to and from this port from March 1 to December 31, 1855, was 1,644; or an average per day for that period of 5.3.

The total amount of tonnage arriving and departing during that period was 812,910 tons; or an average per day during that period of 306 days, of 2,656¼ tons.

No duties on foreign importations were collected at this port during the year 1855.

The value of merchandise received at this from other United States ports during the year 1855 was..$305,126 00
The value of merchandise shipped from this port to other ports in 1855 was.. 446,449 40

Total value of receipts and shipments in 1855, all by lake vessels..........$751,575 40
The value of produce received at this port by land transportation from the country during the year 1855 was.................................. 43,000 00

Total value of receipts by lake and by land, and of lake shipments, at the port of Manitowoc, Wisconsin, in 1855.... ....$794,575 40

I had no means of obtaining, with accuracy, the quantity and value of merchandise which were sent from Manitowoc by land transportation into the surrounding country, such as dry goods, groceries, wearing apparel, &c. If these could have been added, it would, I believe, have shown the trade of Manitowoc to have amounted in the year 1855 to full one million of dollars, ($1,000,000.) I am indebted to C. W. Fitch, Esq., for valuable assistance in obtaining the statistics for this port.

One or two railroads are in construction from Manitowoc to the west and northwest. These improvements will greatly increase the commerce of this port.

Manitowoc is the most northern of the harbors of Lake Michigan improved by the United States. It derives additional importance from the fact that, when completed, it will afford the first point of refuge from storms for shipping bound from any of the other great lakes to this or to the most southern ports of Lake Michigan. It appears very important to the commerce of the lakes generally that there should be a good harbor here.

[Manitowoc has acquired a great reputation as a point for ship-building, for which it possesses natural advantages above every other port on the west coast of Lake Michigan. The best oak, elm, and hackmatack timber in the west grows abundantly in Manitowoc county. Manitowoc has been denominated the "Clipper City," from the surpassing speed of vessels built there.]

THE DISASTERS ON THE WESTERN RIVERS.—The Louisville *Courier* has a long list of steamboat disasters that occurred on the Western ri during the year 1856. The recapitulation is as follows: Boats lost by 59; by burning, 23; by collision, 7; by ice, 34; by explosions, 8; casualties, 21; t tal steamers lost, 152; flats and barges lost, 50; loss of property, $2,637,000. In addition to the above disasters th some forty or fifty accidents by flood, fire, snags or collisions, wh and cargoes were damaged to a large amount in the aggregate.

THE TRANSATLANTIC TELEGRAPH.

LETTER FROM PROFESSOR MAURY.

U. S. N. OBSERVATORY,
WASHINGTON, *December* 31, 1856.

SIR: I have received your note of the 30th inst., making certain inquiries in relation to the submarine telegraph of the Atlantic, and wishing to know what are the obstructions which prevent the western end of the wire from being brought straight across the sea to our own shore.

The difficulties are manifold, and, in the present state of the telegraphic art, they may be considered insuperable.

The shortest telegraphic distances between the British islands and the United States, without touching English soil by the way, is, in round numbers, three thousand miles, and the lightning has never yet been made to bear a message through a continuous wire of such a length. Here, therefore, is an obstruction.

The distance from the Western Islands to the nearest port on our shores is about equal to the distance between Newfoundland and Ireland; and the distance between the Irish coast and the Western Islands is about fifteen hundred miles. Therefore, with a relay on the Western Islands, a line from Ireland, via those Islands to our own shores, is electrically practicable.

But a wire by that route would have to cross the Atlantic at its deepest part, and then the Portuguese government, as well as the English, would have control of the line; so that, in a military, commercial, or political point of view, nothing would be gained by underrunning the Atlantic with the telegraphic wires by that route. Moreover, that route would lead the wire across a volcanic region. These constitute obstructions that, in the present state of our knowledge, are fatal to such a route.

The only practicable route for a submarine telegraph between the United States and England appears to be along the "plateau" of the Atlantic, whereon it is proposed to lay the wire that is now in process of construction.

But suppose a line were to be constructed by American enterprise from the British shores, submarine, all the way to one of our seaport towns—*cui bono?* In time of peace the line along the "plateau" would, by reason of its great advantages, take all the business; and in war, the British authorities need but cut the American cord, or take charge of its office at the other end, to render the whole line inoperative or perfectly useless to us.

It cannot but be regarded by every wise and good man as a fortunate circumstance that the great enterprise of the sub-Atlantic telegraph is the joint work of England and America. This circumstance ought of itself to serve as a guarantee to the world that in case of war—should war unhappily ever be waged between these two nations—that cord is never to be broken,

or to be used freely and fairly alike by the two nations, their citizens and subjects.

We have just seen the great nations of Europe emerging from the horrors of a fierce and bloody war, and yet, to their honor and the glory of the age be it said, that that strife, vengeful though it was, was not savage enough to break a single line of telegraphic wire. The lightning ran to and fro with messages between St. Petersburgh and the capitals of France and England, as it now does. And in case of war with this country, after that electric cord is stretched by the joint means and enterprise of the two people upon the quiet bottom of the deep sea, neither of the two governments would dare take that cord, and, in the face of the Christian States and people of the age, convert it into a military engine, to be turned against its joint owners and partners.

Our fellow citizens who contrived, planned and brought forward this noble work, are too sagacious and patriotic not to have perceived that, lying as it does wholly within the control of a foreign power, were it a nation of Goths and Vandals, might turn the path they were to make for the lightning along the bed of the ocean against their own country in war; but they knew the people on the other side, and trusted to higher and nobler sentiments.

The British government interfere with the free use of that cable even in war! The spirit of the age is against such an act, and no State within the pale of Christendom, much less that great English nation of noble people, would dare to do such a thing. Her people and rulers would not, if they could; they could not, if they would. We might as well think of tearing up now, in peace, the railways between Canada and the States, or of abrogating the steam engine, because it may be turned against us in war.

When Captain Cook was on his voyage of discovery, France and England were at war. The King of France was requested not to let his armed cruisers destroy the records of that expedition, in case any of them should fall in with it. You recollect the noble reply: "I war not against science;" and forthwith every French man-of-war had orders to treat Cook as a friend, should they fall in with him, and assist, not interrupt him, in the object of his cruise. To this day, the memory of that King is held in more esteem for that act and sentiment than for any other act of his reign.

A little more than three years ago, at the maritime conference of Brussels, where the principal nations of the world were assembled in the persons of their representatives to devise a uniform plan of physical research at sea, and to report the best form for the abstract log to be used on board ship for making the observations upon its winds and currents, those functionaries alluded to this sentiment of the French monarch, and appealed each to his own government to order that, in case of war, this abstract log should also be regarded as a sacred thing. It is made so. The armed

cruisers of the various nations that are co-operating in this system of research are required to touch that record with none but friendly hands.

This submarine telegraph line is an achievement with which this very system of research has had something to do in bringing about; and is it likely that it will or can be monopolized by any Power for war purposes? Fairly and clearly it may be considered as the joint property of those nations who are operating as co-workers and joint co-laborers in that beautiful system of physical research by which a way for the lightning has been discovered under the sea and across the ocean.

This system of research, it has been proclaimed over and over again, was not undertaken for the exclusive advantage of any one people or nation, but for the benefit of commerce, the advancement of science, and for the benefit of the whole human family; and with this understanding, the nations of Europe entered into it.

Being joint owners and equal participators in such a great enterprise as this, we may, with propriety under these circumstances, demand a fair participation in all its advantages.

But suppose we should stand aloof, and that the enterprise now on foot should be abandoned by our citizens and government, and then suppose war to come. In less than six months after its declaration the British government could, on its own account, have a wire stretched along this telegraphic plateau between Newfoundland and Ireland.

You do not desire me in your note to consider the Christianizing, political, social, and peace-preserving influence which this fascicle of copper threads, when once stretched upon the bed of the ocean, is to have, and therefore I do not offer any of the views which present themselves from such a stand point.

This much, however, I may say: submarine telegraphy is in its infancy, but it is in the act of making the stride of a full-grown giant, and no problem can to my mind be more satisfactorily demonstrated than is the practicability of readily, and almost without risk, laying the wire from land to land upon this "telegraphic plateau" of the Atlantic. Respectfully, &c.,

M. F. Maury.

Hon. C. C. Chaffee, *House of Representatives, Washington.*

OCEAN STEAMERS FOR MAKING MONEY.

Y

THE article bearing the above caption in the January number has been the means of introducing us to a new correspondent, to whose remarks we cheerfully give place, and with equal satisfaction answer his interrogatories. If our rejoinder should fail to satisfy him, we should be pleased to hear from him again.

MESSRS. EDITORS:—In your magazine for January may be seen an article entitled, "Ocean Steamers for Making Money." Although the author or authors of the above article may be perfectly acquainted with Ocean steam navigation, or navigation in general, they may be thoroughly acquainted with the art of ship-building in all its branches, they cannot at least be acquainted with the principles and practices which enable American merchants and others to keep their steamers together in a line.

As regards the mysteries of brokerage and merchandize, I am not totally ignorant, but I can inform my worthy friends that a large number of our merchants who own steamers, either in whole or part, that it is one of their grand objects and aims to study out, and improve in, the art of building Ocean steamers, and try, and are now trying, to outvie each other, in speed, safety and comfort.

You say, we continue to see lines of Ocean steamers built upon the non-paying principle, and American lines of steamers declaring no dividends. If you refer to transatlantic lines, please inform me how many there are? I can count, (for carrying mails,) three American and one English.

In regard to the construction of steamers for carrying mails and passengers and for freight, that idea is perfectly absurd; inasmuch as it would be a waste of both money and time to build steamers only for the transition of mails and passengers, and for that purpose smaller steamers would be necessary; and it has been fairly proven, that the larger the vessel the greater safety is insured. And, moreover, wherein would be the necessity of building such ships, as there would consequently be room, which, if not occupied by freight, would be thrown to waste? for what passenger is there who would take a state-room in the hold of a ship, unless it would be one of your emigrants who would be willing to stow himself away in a coal-bunker if he could but get to America? You say, our paddle-wheel steamers are too large to be profitable for first-class passengers and mails transit. My foregoing remark demonstrates, that in order to insure safety, vessels must be built of some size. As regards the Persia, my limited knowledge of her prevents me from passing any remark. Your philosophy in relation to the length and depth of a vessel may be perfectly true; but my view of the matter is quite different, because no matter how long a vessel may be, or how much water she may draw, if she has beam enough, it will counteract altogether the effect which may be inconvenienced in her speed, owing to her great draft. You say, Collins' line of steamers in order to pay must be made to carry emigrant passengers. Either you must be very partial to the Cunard line, or you cannot have honor of our nation very greatly at heart, or else you would not be guilty of making a statement, as no American with true American feelings would see our U. S. steamers transformed from their original beauty to become the prison-house of emigrant passengers for ten or twelve days, even allowing that they have lost the[illegible] tation. Instead of that, it should be the pleasure of every true-hearted American t[illegible] as far as lays in his power, to uphold the line which the owners have so long [illegible] maintain. In the summer time there are thousands who cross the Ocean on busi[illegible] perhaps as many more go for pleasure; and if the steamers were of the construc[illegible] you propose, the consequence would be, that there would be no travel at all, as [illegible] not risk their lives in such small vessels.

You say, by the adoption of such a measure, to wit: the transforming of Collins' steamers, the line would be out of the way and make room for a new line. Instead of arranging the ships as you would have them, it would be far more profitable for the stockholders to make fire-wood of their ships, and sell the machinery for old iron, rather than have them pointed at as being once the pride of the nation; but instead of sympathizing with the stockholders in their apparent downfall, you would see them still lower, in order to have them trampled upon by an unprincipled set of men who would succeed in getting a small amount from Congress, and, after a while, what would be the consequence? Why, we would see a few paltry vessels with the appellation of steamers, and naturally there would be more shipwreck and loss of life than has been by the *disastrous loss of two steamers!*

The Collins' line have lost their confidence, and have been a disgrace to the nation; and what have been the causes of their misfortunes? They have been unfortunate in losing two [illegible] vessels, and, of course, in order to fulfil their contract, have been obliged to charter vessels in their place. In the loss of the Arctic, the steamer Nashville was chartered, and, after a while, they continued to run their remaining three vessels, until the loss of the Pacific, when they chartered the *small* steamer Quaker City, and when they returned home, the engineers and others would have left her, as they stated she was not large enough to cross the Ocean. On the return of the Quaker City, the Ericsson had returned from her voyage to Havre, and was chartered to take the place of the Pacific, which position she has retained, and has continued to make on an average as quick passages as other vessels of her size, and, were she not followed by the Persia, her comparatively long passages would not be noticed so much. The emissaries of the Cunard line are continually undermining the small amount of confidence which they once enjoyed; and what is the secret of their success? They have not met with the loss of a single vessel since they commenced the Mail line in connection with the United States; and when there is an accident to any one of the steamers, they can replace the vacancy, as their number is larger than all the American lines put together. As to the Collins line being sustained by foreign capital, that is wholly untrue, and it can be proved. Can you tell me the reason why its managers have reduced their rate of speed? If not, I think I can give one, viz: that the wear and tear caused by a high rate of speed would still farther prevent them from making their trips as regularly as they do at present; and to show you the difference between one of Collins' line and one of the Cunard line, we will take the Persia for an example. She has been running to the United States about one year, or perhaps a little longer, and in that time she has been withdrawn twice. Now, which one of the Collins' line has been withdrawn in that time? The Persia is a new ship, and the Collins' steamers have been running regularly for eight or nine years; and as I do not recollect the precise time when they commenced, I cannot say how long they have been running.

Were these noble steamers changed to suit your fancy, you say, it would benefit the owners and the country at large. Have we not packet ships enough *importing* emigrants to this country, without altering our largest steamers to engage in that traffic?

Perhaps you had better petition Congress to grant your favored emigrants a tract of land and let them settle, and in course of time we will have another State added to our Union, entitling to its members a seat in our legislative Halls.

Next, we would have a line of steamers built upon American principles, which need not cost more than one million dollars. Pray, tell me how many steamers may be built for that sum, in order to establish a line?

As to arranging the Ericsson for carrying 2,000 emigrants and conforming to the provisions of the law, that is out of the question, as her tonnage would not permit her to carry that number without being liable to be *fined.*

As you appear to have so much capital at command, I would advise you to commence

immediately with the line you talk so much about, and if you can do it in one year, and with the above amount, you will have won the laurels of this country and of all others.

AMERICAN.

New-York, February, 1857.

We should not have deemed the above article of sufficient importance to require a reply, were it not that the writer is deeply interested in the success of the Collins' line of steamers, which may readily account for *his patent patriotism*, so superficially set forth. We will endeavor briefly to reply to his arguments in the order in which they appear. First,—As to the "principles and practices which enable merchants to keep lines of steamers together." These have been fully set forth in the history of the line referred to, and need not one word in reply.

The "aim of merchants to outvie each other," is also fully proved in *their ambition to be the modellers*, as well as the owners, of vessels, which they in reality are, when they determine or influence the principal dimensions. The man who furnishes the dimensions of a vessel models her, in all the most important elements of success consequent upon shape. There are three American lines of trans-atlantic side-wheel steamers, neither of which have made money for their owners, though they have no doubt done so for the agents of the lines; hence their desire for continuance without change.

The absurdity of steamers for passengers and mails does not appear quite so clear to an intelligent reader, when he remembers that one of the Collins steamers is prepared to accommodate some 400 passengers, and, say, 800 tons of freight at most. To do this, an outlay of between 8 and $900,000 and a cargo of coal of 1,500 tons is required, and with a most extravagant list of expenditure both in port and at sea; but let it be remembered, that one of the largest in the line carried, on a recent trip, a number of first-class passengers only equal to a baker's dozen. The writer perhaps did not think of this when he wrote about "taking passengers in the hold." We do not propose to abate, *but to increase*, the comforts of a sea voyage, and know as well how it is to be done as our critic, or his advisers. That side wheel steamers are too large to be profitable, is apparent from the great disparity between the accommodations and the travel, the year through—in addition to the fact, that the cost of steamers increases much faster than the proportions of capacity, particularly when speed is required. Now, if two vessels supply the place of one, and carry all the passengers, and at half the length of intervals between times of departure, who will say, that it will not be more acceptable to the travelling public, and more particularly when the more frequent arrival of foreign news is considered? But the whole story is not told. The two vessels need not cost more than half as much as one of the Collins' steamers has cost, and yet be safer, faster, more comfortable and with less sea-sickness, *not because they are smaller*, but because of their being more in conformity with principles which the veriest ignoramus should fully com-

prehend, who fairly examined. When, where and how has it been proved, that large steamers are safer than smaller ones? The list of disasters does not prove it, but rather proves the contrary. Does the writer know that large ships are not, and never have been, built as strong, and, in the same ratio, are not as safe as smaller ships? If not, we tell him that such is the fact. If he would know some of the reasons why, we refer him to the article on Marine Insurance in the present number. If the life-boats carried by our Ocean steamers were as weak, in proportion to their size and intended burthen, as the ships themselves are, could they be suspended by their ends as they now are? or would passengers in the hour of peril have more confidence in the boat than in the ship, and make the exchange which they are sometimes obliged to do? Does the writer not know that if boats were over-burdened by top-hamper and disproportioned depth, as steam-ships are, no intelligent man would ever think of calling them life-boats, or using them as such in time of need? The case of the Quaker City proves that the engineers knew how to exchange a small ship for a larger one, but nothing more. Our correspondent undertakes to tell of dimensions and draft of water; but the subject not being intelligible to his own mind, he could neither lay down his premises nor draw his conclusions, and we must leave the proposition for him to finish, before we can reply. Our "partiality to the Cunard line!" This is indeed a cool assumption. The writer has not been a constant reader of the NAUTICAL MAGAZINE, or he would not have made the charge. We refer to the whole tenor of our writings in proof of our proclivities. How absurd and ridiculous to talk of burning and selling for old iron the hull and machinery of vessels that have done service, and being worn out for first class vessels, take the next grade, as packet ships and other steamers have done! Would the writer, from a foolish pride, keep them on the line until the whole line disappeared, as part of it has? Are not the hulls of other steamers to be seen now, that have done as much service as any one of the Collins line, and no one is disgraced by it? But he tells us that the Persia has been withdrawn twice for repairs, and tells us that the Collins line have not been thus detained. Perhaps he thought the long detention of the Pacific too unimportant a matter to mention, or that she has not been withdrawn. Now, in all candor, have we not done enough for the Collins line of steamers, seeing that it was upon the information we furnished, that it was saved from being the most complete abortion this country ever witnessed? We should not thus have lifted the veil of exposure, had we not been charged with a want of patriotism. Is it patriotism to favor Mr. Collins' line of steamers? and is it a want of patriotism to prefer another line of American steamers possessing more of the elements of success? We say, in the language of Patrick Henry, "If this be treason, make the most of it who will."

We pursue a course which we think will bring the most honor, not on Mr.

Collins, but on the country which gave us birth. The public will learn, (but we dare not say in how many lessons), that there is no royal road to scientific and practical knowledge. If Mr. Collins had shown himself to be a man of the age, would he not rather have spent a part of his time, at least, with men of genius and practical knowledge, in seeking to improve upon the past, instead of depending upon Congress and capital to help him? If a combination of scientific and practical knowledge, obtained from practical men, had been worth anything in his first lesson on Ocean steamers, surely, a second lesson could do him no harm. His memory is not so treacherous as to cause him to forget that it was from one of the Editors of the U. S. NAUTICAL MAGAZINE that he first learned that the *stability* of a vessel was a mathematical inquiry. Surely, he has not forgotten that it was upon an investigation made by the individual alluded to, that he owes a portion of what success the line which bears his name has enjoyed. But for the investigation alluded to, this line would have been a disgrace to the American name, even worse than the steamer Washington, which went into port partly on her side, instead of her bottom, and, like other steam abortions, would have required logs on the sides to keep them upright. With regard to foreign capital invested in this line, we have only to say, that we had regarded the remarks from one who speaks understandingly of this line as reliable. The remarks in relation to emigrants are equally out of place. The writer surely would not doubt the propriety of securing the profits of emigration to American rather than British merchants, to whom they are now going. To the last remark about capital and our constructing a line of steamers, we have only to say, that we are not the agents of any line, nor do we expect to be. But seeing that he is involved with the Collins line, we will tender our services to help him out of his dilemma, by proposing to build one, or a line of steamers, which shall be at least 240 feet long, and not less than 36 feet wide, which shall be capable of accommodating 100 first-class passengers in state-rooms, between decks, and not in the *hold*, as the writer supposed, 50 tons of express freight, water, and the mails, &c.—to be a better sea boat, stronger, more stable, with less roll and pitch, and faster by at least one day in crossing the Atlantic, than any one of the Collins line, for the sum of $175,000; and if he will increase the ficient to justify it, we will guarantee the performance as above st

THE EAST INDIA AND PACIFIC TRADE OF THE UNITED STATES.

[From the Boston Traveler, January 8th.]

We have received from our old correspondent, "Bowline," the annual abstract prepared by him, of the East India and Pacific trade of the United States, by which it will be seen that the former has increased very much since last year. Although the clearances for India have not been so large as they were in 1855, the number of arrivals from ports at and beyond the Cape of Good Hope have been 226, against those of 1855, which were 168—being an increase of 58. Boston still has the claim of being more extensively engaged in the East India trade than any other port in the Union, the arrivals from one port alone (Calcutta) being almost as large as the whole number from all the India ports at New-York. The number of arrivals at this port from Calcutta, the past year, have increased over those of any preceding year, there being 77, an increase of 8 over those of 1855, when there were 69. There will, no doubt, be a larger increase of arrivals from the above ports the present year, as a very large number of vessels are on their way to and from India. At the last accounts from Calcutta, there were about 30 loaded and loading for Boston, and a large number were expected from Europe and the United States, most of which will probably proceed to this port. The Pacific trade has somewhat decreased during the past year from that of former years, in consequence of there not being as many vessels engaged in the California trade as formerly.

The whole number of arrivals in the United States from the East Indies, are 226. Last year, 168. At—

Boston	113	Providence	1
New-York	82	Savannah	1
Salem	7		
Philadelphia	2	Total	226

At Boston 133. Last year 100. From

Calcutta	77	Whampoa	1
Manilla	22	Hong Kong via New-York	1
Cape Town	9	Padang via New-York	1
Singapore	4	Singapore via Rotterdam	1
Padang	4	Canton	1
Penang	2	Canton via London	1
Batavia	2	Sumatra	1
Mauritius via London	1	Shanghai via New-York	1
Foo Chow Fow	2	Calcutta via London	1
Total			133

At New York, 82.* Last year 59. From

Manilla	15	Penang	5
Shanghai	14	Canton	4

* Of which 50 belonged to Boston, and ports east of New-York.

Singapore	12	Calcutta via London	1
Foo Chow Fow	9	Foo Chow Fow via Havana	1
Calcutta	9	Swatow via Havana	1
Hong Kong	6		
Whampoa	5	Total	82

At Salem, 7. Last year, 6. From

Zanzibar	5	Manilla	1
Penang	1		
		Total	7

At Philadelphia, 2. Last year, 4. From

Calcutta	1	Calcutta via London	1

At Providence, 1 from Zanzibar.

At Savannah, 1 from Calcutta via Liverpool.

The whole number of clearances in the United States for East Indies, 161. Last year, 172. At

Boston	96	Baltimore	2
New-York	40	Mobile	2
Salem	8	Portland	1
New-Orleans	6	Newburyport	1
Providence	3		
Philadelphia	2	Total	161

At Boston, 96. Last year, 75. For

Calcutta	28	Sumatra	2
Batavia	10	Singapore	4
Cape Town	14	Calcutta via London	2
Manilla	6	Calcutta via Liverpool	1
Bombay	5	Zanzibar via Providence	1
Hong Kong	4	Padang	1
Calcutta via Buenos Ayres	5	Columbo	1
Madras and Calcutta	3	Whampoa	1
Akyab	3		
Madras	3	Total	96

At New-York, 40.* Last year, 50. For

Hong Kong	9	Bombay	2
Calcutta	5	Mauritius	1
Shanghai	4	Singapore	1
Cape Town	3	Angier	1
Canton	8	Akyab	1
Batavia	2	Siam	1
Calcutta via Buenos Ayres	3	Padang	1
Sumatra	2		
Total			40

* Of which, 24 traded from Boston and ports east of New-York.

At Salem, 9. Last year, 8. For

Zanzibar	7	Penang	1
Batavia	1		

At New-Orleans, 6. Last year, 24. For

Calcutta via Liverpool	5	Bombay via Liverpool	1

At Providence, 3 for Zanzibar. Last year, 1.

At Philadelphia, 2. Last year, 4. For

Calcutta	1	Manilla	1

At Baltimore, 2 for Cape Town. Last year, 3.

At Mobile, 2 for Calcutta. Last year, 0.

At Newburyport, 1 for Calcutta. Last year, 0.

At Portland, 1 for Calcutta via Buenos Ayres. Last year, 1.

PACIFIC TRADE OF THE UNITED STATES.

The whole number of arrivals in the United States from ports in the Pacific, during the year 1856, were 69.

Last year, 146. From

Boston	14	Norfolk	6
New-York	20	New-London	1
Philadelphia	11		
Baltimore	17	Total	69

At Boston, 14. Last year, 18. From

Talcahuana	3	Honolulu via New-London	1
Valparaiso	3	Iquique	1
Caldera, Chili	3	Peru Blanca	1
Tongoy, "	2		
		Total	14

At New-York, 20. Last year, 38. From

Callao	10	Caldera	1
California	3	Callao via Valencia	1
Honolulu	4		
Arica	1	Total	20

At Baltimore, 17. Last year, 48. From

Callao	14	Tongoy, Chili	1
Valparaiso	1		
Coquimbo	1	Total	17

At Norfolk, 6 from Callao. Last year, 19.

At Philadelphia, 11. Last year, 10. From

Callao	10	Iquique	1

Whole No. of clearances for the Pacific in 1856, 261. Last year, 237. At

Boston	108	Providence	1
New-York	127	Portland	1
Baltimore	11	Savannah	1
Philadelphia	5	Salem	1
New-London	2	New-Orleans	2
Bangor	1		
Charleston, S. C.	1	Total	26

At Boston, 108. Last year, 95. For

California	34	W. C. C. America via Philadelphia	1
Australia	18	Guayaquil	2
Valparaiso	16	Valparaiso via St. John	1
Honolulu	5	Callao via Liverpool	2
Callao	8	Valparaiso via Liberia	1
California via New-York	4	Panama via New-York	1
Australia via St. John	4	Arica	1
Australia via London	1	Australia via Richmond	2
New South Wales	2	Tahiti	1
Callao via London	3		
W. C. C. America	1	Total	108

At New-York, 117. Last year, 113. For

California	73	Honolulu	1
Australia	19	Iquique	1
Valparaiso	12	Panama	2
New South Wales	5	Acapulco	1
Hobart Town	1		
W. C. C. America	2	Total	117

At Baltimore, 11. Last year, 7. For

W. C. C. America	4	Valparaiso via Rio	1
California	2	Arica	1
Acapulco	2		
Valparaiso	1	Total	11

At Portland, 1 for Callao via Buenos Ayres.

At Savannah, 1 for New South Wales.

At Philadelphia, 5. Last year, 10. For

California	4	Panama	1

At New-London, 2. For

California	1	Honolulu	1

At Providence, 1 for Australia via St. Johns. Last year, 1.

At Salem, 1 for Feejee Islands.

At Bangor, 1 for Valparaiso.

At New-Orleans, 2. Last year, 4. For

Callao via Liverpool	1	Callao via Havre	1

At Charleston, S. C., 1 for Callao.

TURPENTINE AND RESIN.—The Wilmington (N. C.) Herald states the exports of Turpentine from that place, in 1856, contrasted with th 1855, fall short 2431 bbls.; Crude Turpentine, 5175 bbls.; Rosin, 2,98 Pitch, 425 bbls.

SHIPPING REVIEW.

FREIGHTS IN JANUARY.—We conclude our record for the closing of the month of December.

Dec. 31.—The extraordinary depression of the market, which was noticed in our last quotation, in freights from New-York to Great Britain, was shortly recovered, and, at the closing of the year, increased activity prevailed. In other directions, no change of movement occurred. There was quite a movement in breadstuff charters for the south of Europe, and more demand for medium size vessels for the West India sugar trade, at about previous rates. Cotton rates in New-Orleans had declined to 9-16d, and checked the disposition of owners to send shipping to the Gulf, especially in view of grain rates rising. To Liverpool, corn at 6½d. *a* 7d.; flour, 2s.; cotton, 3-16d. To London, flour, 3s. To Glasgow, wheat, 10d.

Jan. 3.—The month opened with an improving market in grain freights to Great Britain, though the business was light. Flour to Liverpool, 2s. 3d.; grain, 7d. *a* 8d. To San Francisco, the market was very dull. Agents were adopting the Packet system, viz: fixed days of sailing, and taking no freights thereafter. This plan was working well, though some ships had sailed without full cargoes. Rates, 25c. To Valparaiso, lumber at $12. To Lisbon, corn, 20c. To Hamburgh, logwood, 30s.

Jan. 10.—The immense quantities of floating ice in New-York harbor restricted shipments, but the market maintained its buoyancy. Rates to Liverpool, 7½d. *a* 8d. for grain; flour, 2s. 3d. *a* 2s. 6d.; pork, 3s. 6d. To London, flour, 3s.; pork, 3s. To Glasgow, 3s. Charters: ship Red Gauntlet, 1,038, to Melbourne, at $15,000. A schr., 270 tons, from Palermo to New-York, about $2,000. A schr. to Montevideo, with privilege of Buenos Ayres, lumber, $18. A Danish brig to Oporto, grain, 22c., and flour, $1. Brig from Jacksonville to Cardenas, lumber, $9. The dullness continued at New-Orleans. At Baltimore, Jan. 3, tonnage was scarce for Great Britain, but coastwise very little doing. At Boston, freights remained without change; engagements moderate to any quarter. Coal freights from Philadelphia firm at $3.

Jan. 17.—Business continued light on account of the ice blockade, although the market was firm. Vessels of 200 or 300 tons, suitable for West India trade, were scarce. Rates to Liverpool had declined; grain at 6½d. *a* 7½d., closing at 7d. *a* 7½d.; flour, 2s. 3d. *a* 2s. 6d. In other directions no change of importance. Charters: from Calcutta to Boston, $14.75 per ton. A brig from south side Cuba to New-York, 40c. *a* $3, port charges not paid.

Jan. 21.—The market has necessarily been inactive, owing to the inclemency of the weather and the ice blockade of nearly all Atlantic ports. Rates have undergone no change except for small bottoms, which have slightly advanced.

SEAMEN AND WAGES.

Jan. 10.—Seamen were in fair supply, and wages had not varied from previous quotations.

Jan. 24.—No change to report at this date.

SALES AND PRICES OF SHIPS.

The market continues dull.

Ship Athena, new, 1,057 tons, sold to a German house at $60,000, equal to cash.

Ship Zingara, new, 715 tons, by auction, for $30,000, cash, 4 months.

Ship Cynthia, at Batavia, condemned, and sold for 21,500 florins.

Ship Belle of the Ocean, at Warren, R. I., of 1,000 tons, ready for launching, has been sold to Cady & Aldrich and others, of Providence, for the freighting business.

A new ship at East Boston, 1,200 tons, built by Messrs. Boole, has been sold to a Thomaston house for about $70,000.

Brig Tyrant sold in New-York for $8,150.

One-eighth of ship Emerald, as discharged from last voyage, was sold at New-Bedford at the rate of $2,600.

A new ship, 680 tons, built at Bath, ready for sea, was sold for $31,500—about $46 per ton.

Br. barque Ann Elizabeth sold at auction, in Baltimore, for $10,000.

Ship Amaranth, 666 tons, at Boston, for $27,000.

SALE OF SHIPS IN LIVERPOOL IN 1856.

The Liverpool *Times*, of the 3d inst., says:

"We publish our customary annual summary of the past year's business in the sale of ships at our port. The result is about as satisfactory as that of 1855, but very different from the anticipations of builders and holders at the commencement of the year, who generally looked to a steadily increased demand, with better prices, as the year advanced, reasonably believing that in proportion as we removed from a state of war to that of peace we should find considerable improvement in shipping, as in every other department of trade; in place of which they have had to contend against the combination of low freights almost everywhere, and a vastly increased price of money; and were it not for the steady enlargement of the trade of the country, and of our port in particular, combined with the necessity of supplying the enormous losses in shipping which have arisen in 1855-6, we should have had a very different year of business to report. The number of vessels lost in 1855 on or near the coast of the United Kingdom amounts to 1,141 sail, making an aggregate of 176,600 tons. The official returns of 1856 have not yet been completed; there is, however, too much reason to believe the destruction will be nearly, if not quite equal to, that of 1855. At no period of the year have we been without a full supply of ships of almost every class and size, at all times exceeding the demand. We quote the average price for the past year of first class St. John's and other colonial ships at £7 10s. to £7 15s. of from 1,000 to 1,200 tons; some few of superior model and finish from 600 to 750 tons reached, and in a few instances exceeded, £8 per ton. We need hardly observe, prices and demand fluctuated in proportion as the money market rose and fell."

NEW SHIPS ON THE STOCKS FOR SALE.

At Chelsea, Mass., John Taylor, Esq., is building a first-class ship, to be highly finished and furnished throughout, owned by A. Cunningham & Sons. Dimensions as follows: Length on deck, 173 feet; over all, 183 feet; beam, 35 feet; hold, 23½ feet; dead rise, 15 inches; tonnage, about 950.

Mr. Taylor's reputation as a builder is first rate. We are not advised of any other ships building for the market.

SHIP-BUILDING IN NEW-YORK FOR 1856.*

The great depression experienced in 1855 was gradually removed during the year, and general confidence has been steadily increased, although there has not been a return to the measure of activity and enterprise which has distinguished former years. Prices have been moderate, but regular, for ships, materials and labor, and perhaps it may be inferred, that prospects are better for the new year than they were on the opening of the past. The total amount of tonnage built in a given year does not always give a correct idea of the condition of ship-building, for parties are sometimes so circumstanced as to be obliged to build, even if they do it at a loss. This was in some measure the case in 1855, but not in 1856, and will not probably be in 1857.

Few, if any, ships are built in New-York for the general market. The Eastern States

supply all such, even to our own merchants. The ship-building of New-York is carried on by contracts for particular parties, and for special purposes; building on speculation is now almost unknown at this port. It is to this characteristic fact that New-York built-shipping is so generally accredited to possess a first-class character.

The following statistics show the operations of the year:

NEW-YORK-CITY.—By Wm. H. Webb.

February 7, ship John H. Elliott, of 1,200 tons, for Messrs. Post, Smith & Co. March 13, bark Alice Painter, of 700 tons, for Messrs. Post, Smith & Co. April 7, steamship Cuba, 850 tons, owned by Belago, Pardo & Co., of Havana, for the South American trade. April 23, ship Intrepid, of 1,500 tons, for Messrs. Bucklin & Crane. April 29, steamer Guatemala, of 300 tons, for B. Blanco, Esq. September 6, steamtug William H. Webb, 750 tons, for Chambers & Heiser and others, for service in this harbor. September 15, ship Ocean Monarch, of 3,000 tons, for Wm. T. Frost, Esq., and others, for the Liverpool trade. October 14, ship Uncowan, of 1,200 tons, for Messrs. Wakeman, Dimon & Co., for their East India trade. December 29, ship Black Hawk, of 1,500 tons, for Bucklin & Crane.

On the Stocks.—A ship of 1,500 tons, for Post, Smith & Co; she is about one-third completed. A bark of 700 tons, owned by Wm. H. Webb, and for sale. A steamship of 1,500 tons is about being commenced.

BY ABRAHAM C. BELL.

Launched.—February 17, ship Kitty Simpson, of 700 tons, for Simpson & Sons, in the Bordeaux trade. May, bark St. Jean, of 640 tons, for V. Marzion, of Havre. July 31, bark Rosette, of 575 tons, for Messrs. M. M. Freeman & Co. October, the pilot boat Oriental, of 64 tons, for Abram C. Bell.

THE WESTERVELT YARD.

Launched.—February 23, ship Shepherd Knapp, of 950 tons, for A. M. Lawrence. February 28, bark John J. Palmer, of 500 tons, for J. S. Lawrence, Ostrichs & Co., of this city. July 24, bark Wilhelmine, of 390 tons, for Oelrichs & Co. September 6, pilot boat George W. Blunt, of 200 tons, for the Sandy Hook pilots.

On the Stocks.—Ship Revely, of 650 tons, will be launched about the 1st of February, owned by Wm. A. Sale & Co., for the East India trade. A steamship of 3,000 tons, to be launched about the 1st of March, for Morgan & Sons; she is intended to run on the Nicaragua route from California to Nicaragua. Another steamship of 2,500 tons, for Morgan & Sons, will be launched in May; she is intended to run on the Atlantic-Nicaragua route.

BY ROOSEVELT, JOYCE & CO.

Launched.—January 15, ship Glad Tidings, of 900 tons, for the New-Orleans trade. March 4, bark Exchange, of 550 tons, for Messrs. Eagle & Hazard. June 4, bark Fairy, 600 tons, for the East India trade, and owned by Gorden & Talbert. July 1, bark Horace Beals, of 300 tons, for Beals & Dixon.

On the Stocks.—A ship of 900 tons, owned by McCrady & Wismer, for the East India trade, and a schooner of 300 tons.

BY THOS. A. ERSKINE.

Launched.—December 9, bark C. E. Tilton, of 426 tons, for Messrs. Wakeman, Dimon & Co., intended for the Pacific trade between Oregon and China.

MESSRS. STEERS' YARD.

Launched.—April 7, steamship Adriatic, 5,888 tons, for the Collins' line of Liverpool steamers.

BY THOMAS COLLYER.

Launched.—May 6, the bark Roebuck, of 600 tons, for Reynolds & Cushman, for the Rio Janeiro trade. July 19, the propeller Santa Cruz, of 450 tons, for Isaac E. Davis, of San Francisco. Nov. 24, the steamship ———, of 1,250 tons, for Capt. Thomas W. Dearborn.

On the Stocks.—A bark of 500 tons for the coffee trade; steamboat, of 350 tons, for Boston; another steamboat, of 300 tons, for Lake George.

BY JOHN ENGLIS.

Launched.—March, the steamer Pamlico, of 300 tons, for Demill & Co.; she is to run on the Pamlico Sound to Washington. December 2, steamboat Eastern Queen, of 800 tons, for Kimball & Co., of Boston; she is to run from Boston to Kennebec. December 13, a ferry boat of 750 tons, for the Staten Island Ferry Company.

On the Stocks.—A steamboat of 1,000 tons, for a Portland steam packet company; she will run from Boston to Portland.

BY C. P. MARBLIN.

Launched.—July, a yacht of 80 tons.

BY J. A. BOOLE.

September, the steamer Sylvan Shore, of 150 tons, for the Harlem Navigation Co.

GREENPOINT YARDS.—By Eckford Webb.

Launched.—March 15, three-masted schooner Hartstene, 650 tons, for Messrs. Dunham & Dimon's line of New-York and Savannah packets. May 3, three-masted schooner Cordelia, of the dimensions and for the same parties and service as the Hartstene. May 13, the steamboat Betneta, 60 feet long, 14 feet wide, 4½ feet depth of hold, and 36 tons, for J. H. Johnson, as a pleasure yacht. On the 17th of May the firm of Webb & Bell commenced. November 22, the bark Jane Daggett, 163 feet long, 33 feet 10 inches wide, 20 feet 3 inches depth of hold, and 860 tons, owned by Messrs. Dunham & Dimon, and to run as a packet to Glasgow. December 5, the schooner Guthrie, 84 feet long, 22 feet wide, 8 feet depth of hold, and 135 tons, for the United States government, to be used for a lighthouse tender. October 27, the barge Delaware, of Lackawana, of 100 tons, for the Western Railroad Company. October 28, another barge of the same description and for the same parties as the Delaware, of Lackawana.

On the Stocks.—A bark, 146 feet long, 31½ feet wide, 19½ feet depth of hold, and 670 tons, for Messrs. Tucker, Cooper & Co.

BY J. SIMONSON.

On the Stocks.—Two steamers, each 235 feet long, 35 feet beam, 12½ feet depth of hold, and 800 tons, owned by C. Vanderbilt, and to run on the New-Orleans and Texan route; also two lighters, of 100 tons each, for J. Simonson.

BY EDWARD F. WILLIAMS.

Launched.—July, the bark Lexington, of 350 tons, for Dolner & Potter.

On the Stocks.—A schooner of 350 tons.

BY WILLIAM COLLYER.

Launched.—June 9, the propeller Western World, of 500 tons, for Sherman & Mull, of Albany, to run from this city to Albany. September, the propeller Gen. Moultrie, of 480 tons, for Mr. Easor, of Charleston, S. C., to be used in dredging Charleston bar. Ocotber, the schooner Mary L. Gedney, of 96 tons, for John B. Gedney. November 27,

steamship Columbia, of 1,800 tons, for Messrs. Spofford, Tileston & Co.'s line of Charleston steamers.

ON THE STOCKS.—A propeller of 530 tons for Sherman & Mull, to run up the Hudson river to Albany.

BY E. S. WHITLOCK.

LAUNCHED.—June, a schooner of 50 tons, for the Mexican coast trade. August, a propeller of 400 tons, for Barstow & Co., to run from New-York city to Providence. September, the steamboat Christoval Colon, of 500 tons, for a Spanish company, to run on the south side of Cuba. September, the steamboat Everglade, of 500 tons, for Capt. Coxatter, to run on the coast of Florida. October, a propeller of 400 tons, for Pope & Co.

ON THE STOCKS.—A side-wheel steamboat of 650 tons, for George Corlis, to run to Bridgeport.

BROOKLYN.—ABRAHAM DUNBAR.

LAUNCHED.—October 8, the ship Frederick Gebhard, of 1,100 tons, owned by Messrs. Laytin & Hurlbut, for the Antwerp trade.

ON THE STOCKS.—A brig of 250 tons, owned by Sturges & Brothers, for the South American trade.

MR. THOMAS STACK.

LAUNCHED.—April 12, ship Graham's Polly, of 1,000 tons, for Messrs. Laytin & Hurlbut's line of Antwerp packets. September 15, ship Jacob A. Stamler, of 1,115 tons, for Messrs. Laytin & Hurlbut's line of Antwerp packets. December 6, a lighter of 150 tons, for Wm. Galeway.

ON THE STOCKS.—The bark Teresa, of 500 tons, owned by Maitland, Phelps & Co., for the South American trade.

AT THE NAVY YARD.

LAUNCHED.—February 23, steamship Niagara, 5,200 tons.

BY MESSRS. LAWRENCE & FOULKES.

LAUNCHED.—February, bark Corilla, of 600 tons, for the South American trade, owned by Johnson & Lowden. March, the steamship John Farrow, of 500 tons, for a New-York company. November, the tug boat James A. Stevens, of 100 tons, for Messrs. Palmer & Crary, of New-York.

ON THE STOCKS.—A tug boat of 100 tons, for Peter Crary, of New-York, for towing business, &c. Another tug boat of 100 tons, for Roy, Coffin & Co. This company is about commencing a steamboat of 300 tons, for Captain Porter, to run from New-Orleans to Mobile.

HOBOKEN.—BY MICHAEL L. ALLISON.

LAUNCHED.—October, schooner Arzac, of 385 tons.

RECAPITULATION.

	Launched.	*On Stocks.*	*Totals.*
A. C. Bell	1,979	—	1,979
Wm. H. Webb	10,800	3,700	11,170
Westervelt Ship Yard	2,040	6,150	8,190
Roosevelt, Joyce & Co	2,350	1,200	3,550
T. A. Erskine	426	—	426
Messrs. Steers	5,888	—	5,888
Carried over	23,483	11,050	31,203

	Launched.	On Stocks.	Totals.
Brought over	23,483	11,050	31,203
Thomas Collyer	2,300	1,150	3,450
John Englis	1,850	1,000	2,850
C. P. Marblin	80	—	80
J. A. Boole	150	—	150
Eckford Webb	2,531	670	3,201
J. Simonson	—	800	800
E. F. Williams	350	350	700
Wm. Collyer	2,876	530	3,406
E. S. Whitlock	1,850	650	2,500
A. Dunbar	1,100	250	1,350
T. Stack	2,265	500	2,765
Navy Yard	5,200	—	5,200
Lawrence & Foulkes	1,200	200	1,400
M. L. Allison	385	—	385
Total tonnage	45,620	17,150	59,440

The following table shows the amount of tonnage built during the last ten years:

Total for the year ending—	*Launched.*	*On Stocks.*	*Aggregate tonnage.*
Dec. 31, 1847	36,649	15,710	52,359
Do. 1848	38,085	23,890	61,965
Do. 1849	52,225	27,516	79,741
Do. 1850	65,521	15,240	80,761
Do. 1851	53,048	22,676	75,624
Do. 1852	46,479	58,749	105,228
Do. 1853	56,644	47,580	104,224
Do. 1854	81,140	18,375	99,524
Do. 1855	40,582	23,295	63,877
Do. 1856	45,620	17,159	59,440

This table shows an increase of 5,038 tons in the vessels launched during the present year over the year 1855, while the tonnage of the vessels on the stocks at present is 6,145 tons less than it was at the same time last year.

In Quebec.—At the close of the year there were 33 vessels, of 25,140 tons, aggregate measurement, on the stocks, under special survey by Mr. Menzies (Lloyd's Agent), and 4 other vessels in progress that are not in his charge. There is not the least spirit in the movements of builders. No one expects to make any money.

In the District of Bath, Me.—The following is a list of vessels of all descriptions, built
during the past year. It comprises 42 ships, 5 barques, 1 brig, 6 schooners,
total, 63 vessels, with an aggregate of 39,856 93-95ths. Ships Mary
Bath, 744 41-95ths tons; Eliphalet Greeley, do., 949 23-95ths
742 33-95ths; William V. Moses, do., 862 22-95ths; Oliver Mos
581 13-95ths; Sunshine, do., 144 37-95ths; Union, do., 1,003 6
1,057 48-95ths; National, do., 1,033 77-95ths; Montmorenci, do.
Ocean, do., 1,152 58-95ths; Roswell Sprague, do., 815 50-95ths
1,187 63-95ths; Charlotte, do., 998 22-95ths; J. P. Wheeler, do., 8
663 42-95ths; Sebasticook, do., 569 76-95ths; Mont Blanc, d
do., 1,017 7-95ths; Hellespont, do., 767 2-95ths; John Pa
tution, do., 997 88-95ths; Calliope, do., 1,163 17-95ths; A

Cushing, do., 654 64-95ths; Brazil, built at Richmond, 664 75-95ths; Flora, do., 787; Kasan, do., 668 60-95ths; Lammergier, do., 999 87-95ths; Monticello, do., 799 44-95ths; Bazaar, do., 899 37-95ths; Hortense, do., 560 31-95ths; Forest Oak, Hallowell, 843 2-95ths; Sarah Judkins, do., 545 89-95ths; Sea Dog, Bowdoinham, 570 20-95ths; Helen E. Booker, Georgetown, 897 51-95ths; Armorial, Phipsburg, 529 62-95ths; S. C. Grant, Farmingdale, 1,153 37-95ths; Uncle Joe, Gardiner, 674 8-95ths; Stephen J. Young, Pittson, 652 67-95ths; Chas. Davenport, Woolwich, 974 41-95ths. Barques Palermo, Bath, 585 59-95ths; Tinos, do., 527 69-95ths; Alfred Lemont, do., 639 31-95ths; Amanda Spear, Richmond, 497 32-95ths; Annie Kimball, Brunswick, 598 21-95ths. Brig Madeira, Hallowell, 281 60-95ths. Schrs. Brazil, Augusta, 116 56-95ths; Adeliza, do., 113 84-95ths; Melrose, Woolwich, 48 51-95ths; Emma Ann, Georgetown, 20 30-95ths; Fawn, Richmond, 15 82-95ths; Silver Dart, do., 62 14-95ths; Minnehaha, do., 37 3-95ths. Boats "76," Bath, 24 82-95ths; Orville, do., 37 40-95ths; Ida May, do., 12 3-95ths; Lion, do., 5 52-95ths; Minnehaha, do., 16 22-95ths; Hiawatha, do., 6 1-95ths; Enterprise, do., 6 10-95ths; Mayflower, Woolwich, 9 7-95ths. Total tonnage, 39,856 63-95ths. In addition to the above there are 9 vessels on the stocks, with an aggregate tonnage of about 7,710. Two of the above, however, are completed, and are nearly ready for launching.—*Atlas, Jany.* 20.

LAUNCHES.

At Chelsea, Mass, Dec. 30th, a ship of about 1,000 tons, called the Helen.

At Belfast, 25th Dec., a barque of 500 tons, called the Laura Russ, owned by Oakes Angier, Esq., and Capt. Jas. A. Russ, who is to command her.

Clipper-ship Black Hawk, 1,175 tons, built for Messrs. Bucklin & Crane, and intended for the California and China trade, from the yard of Wm. H. Webb, 29th Dec.

At Bath, Dec 14th, by Messrs. Trufort, Drummond & Co., a ship of 1,180 tons, called the Margaret Tyson. She is owned by Wm. Tyson, Esq., of New-York.

DISASTERS AT SEA.

STEAMERS.

Knoxville, was destroyed by fire at New-York, Dec. 22d.

Hermann, Bremen, for New-York, put into Southampton in distress, Oct. 14th.

Amazon, ashore at Cape Henlopen, high and dry.

Cristoval, from New-York to Havana, came into collision with an unknown schooner, carried away cutwater, and put into Norfolk for repairs.

C. Colton, hence for Havana, put into Norfolk in distress, repaired and proceeded on voyage on the 3d.

City of New-York, from Philadelphia for Boston, returned on account of ice, came in collision with steam tug Atlantic and schr. Daniel Godwin, severely injuring both the latter.

SHIPS.

Adriatic, Liverpool, for New-York, was wrecked near Sungarvoe, Ireland, Dec, 8th, 3 lives lost.

Jersey, went ashore near Cape Henry, Dec. 20th, and will be a total loss.

J. L. Warner, New-Orleans, for Liverpool, was lost near Wexford, Ireland, Dec. 7th.

Clarendon, went ashore near Whitehaven, Dec. 4th, will be a total loss.

Pemberton, (Br.), London, for New-Orleans, was wrecked at the S.W. Pass, Dec. 9th.

S. J. Young, St. Stephens, N. B., for Bristol, E., was abandoned in distress, Dec. 26th.

John Garrow, (Br.), Savannah, for Liverpool, was abandoned in a sinking condition, in December.

Fanny Fern, Charleston, for Amsterdam, put into Plymouth, Eng., in distress, Dec. 14th.

W. Forest, New-York, for Liverpool, put into Greenock, in distress, Dec. 13th.

Vancouver, of Boston, at New-York, from Foo-chow-foo, in heavy weather on the coast, split sails and lost fore-top-sail.

Dirigo, at Bermuda, reports severe weather, cut away main and mizzen masts, 6 feet water in hold.

Volga, from Riga, for Boston, went ashore in a snow storm on south side of St. Stephen's head.

New York, on Squam Beach, went to pieces.

Revere, from Cronstadt, for Boston, at Elsinore in distress, had to be discharged to repair bottom.

Troy, ashore near Bedloe's Island, got off, leaky, discharged, stripped and refastened.

Sky Lark, from Calcutta for Boston, run into French ship St. Germain, going into St. Helena, detained until question of compensation is settled.

Tennessee, from Baltimore for New Bedford, at Newport with loss of boat, and galley, sails split.

Caroline Read, at Mauritius, in a heavy sea on the 20th December, in lat. 19 deg. 28 min. S., lon. 22 deg. E., sprung a leak 6 inches per hour.
Scotia, at Amsterdam, from Baltimore, boisterous passage, sails all blown away, masts sprung, and on her beam ends, ran within the buoys, with several feet of water in bilge.
Jersey, of Salem, 97 days from Callao, bound to Hampton Roads, went ashore at Wash Woods, 30 miles S. of Cape Henry, 1 of the crew drowned.
Hualco, for New Orleans, from Belfast, Me., struck a rock 4 hours out and sunk in 25 fathoms.
Hindostan, at Boston, from Calcutta, lost sails, stove bulwarks in hurricane, Dec. 24th.
Moro Castle, at Portland, from New Castle, Eng., lost jib boom and split sails, in heavy weather, short of provisions.
Cornelius Grinnell, for London, got on Diamond Reef, leaked 14 inches per hour, got off at high water and discharged.
Cultivator was forced on rocks by the ice in New-York harbor, keel damaged.
I. Wakefield, from New-York, at Deal, had heavy weather, lost two men, stove boat and bulwarks.
Empress of the Sea, from Callao, had gales on passage, split jib and fore-sail, at New-York harbor, dragged anchors, damaged by ice.
Elizabeth Kemball, damaged cutwater and windlass considerable in taking a sheer while getting under way near Calcutta, Oct. 28th.
India, from Messina and Gibraltar, at New-York, sprung main mast, lost sails.
Mary Glover, at New-York, from Callao, split sails, stove bulwarks, and sprung a leak.
United States, at New-York, from Marseilles, experienced heavy weather, split sails, &c.
Wellington, at New-York from New-Orleans, lost rudder and sprung main-mast in a gale.
California, at Gloucester, from Surinam, Dec. 22nd, had decks swept, lost long boat, galley, and main-top-sail.
Marshfield, 100 days from Trapani, for Boston, put into Savannah short of provisions and lost sails.
Gauntlett, at New-York, from Havre, during gale lost 2 suits of sails and 1 seaman.
Mediator, from New-Orleans for New-York, returned in distress, leaking badly.
Inca, wrecked on Riding Rocks, got ashore 20th December, is total loss.
Shirley, from Boston, for Mobile, ran on Orange Key, 15th Dec., put into Nassau, thence to Mobile.
Vision, of Farmingdale, Me., at New-York, from Havre, during N. W. gales, lost 2 main-top-sails.
Sumatra, Palermo, for Boston, touched at Gibraltar, Oct. 5, has not since been heard from.
Eliza and Ella, Philadelphia, for Londonderry, got ashore on Manus Bar, Delaware Bay, got off and went to sea.
Java, Greenock, for New-York, went ashore on West Bank, below New-York, total loss, 2 lives lost.
Sea Queen, bound to New-York, at Gibraltar, leaky, fore and main-mast sprung.
Georgia, Callao, ashore near Cape Henry.
Welsford, St. Johns, N. B., for Liverpool, lost on Cape Race, December 25th, 27 lives lost.
Hound, New-York, for San Francisco, put into Rio Janeiro with sprung main-mast and damaged rigging.
John Ganda, Savannah for Liverpool, foundered when but 6 days at sea, crew and passengers arrived at New-York.

BARQUES.

Foundling, Shields, for Constantinople, put into London in distress, Dec. 10th.
Louisiana, Liverpool, for Genoa, went ashore on the rocks near Troon, Eng., will be a total loss.
Roger Stewart, (Br.), Pictou, N. S., for Boston, was wrecked near Arichat, Dec. 13th.
Ricot, Jamaica for New-York, put into Havana in distress, Dec. —
Hanson Gregory, New-York for Bordeaux, put into Cork, Ireland, in distress, Dec. 11th.
Louis Napoleon, at Liverpool from Boston, shipped a sea, carried away bulwarks, stove hatches, boats, and water casks lost, and 1 seaman drowned.
Rebekah, at San Francisco from Batavia, in a hurricane hove on her beam ends, stove bulwarks, and split sails.
Tasso, ashore near Squam Beach, went to pieces.
Greenfield, from Manilla, Aug. 28th, in the Straits of Macassar, sprung main-mast, Dec. 24 twisted off rudder stock, lost bulwarks, &c.
Laconia, Philadelphia for Boston, put into Newport in distress, Jan. 1st.
Byron, from Cardenas for New-York, was cut through by the ice while running up to l and sunk in 10 minutes.
White Cloud, at New-York from Rio Janeiro, in a gale stove bulwarks, water casks, st house, and caused leak 1500 strokes.
Lucy Ann, Mantanzas for Boston, lost main and monkey sails, crew disabled and short
Star-light, at Boston from Smyrna, lost fore and main-top-sail, mizzen-stay-sail, spanl bulwarks, broke main-sail.
Rosette, at New-York from Glasgow, experienced heavy weather, shifted cargo.
Sea-Duck, Marseilles, at New-York, split sails and stove bulwarks.
Vickery, Gambia, at New-York, sprung fore mast, fore and main tressle ties, los aged sails, barometer did not note the gale, but continued to rise.
British Merchant, Alexandria, Egypt, for New-York, ran on reefs off Bermuda

Eagle, from Malaga, for Boston, put into New-York in distress, Dec. 20th.
Abagun, at New-Haven from Shields, reports heavy weather, was thrown on beam ends, cargo shifted, bulwarks stove, decks swept.
Amanda Spear, from St. Johns, N. B., on entering dock at Havre, came in collision with another vessel and lost fore-top-mast, jib-boom, main yard carried away, and mizzen-top-mast sprung, the other vessel had some rigging carried away, but proceeded on voyage.
Maranal, at New-York, from Port Spain, Trinidad, had heavy weather, split sails, &c.
I. A. Hazard, New-Orleans, from Rio Janeiro, 17th Dec, lost top-sail and top-gallant yards, put into Bahia.
Esther Frances, from Amsterdam, lat. 42 deg. 16 min., lon. 40 deg. 11 min., shipped sea, stove bulwarks, sail and boat, sprung main-top-gallant-mast and split sails.
Express, from Havana, 17 days N. of Hatteras, split sails, and part of crew frost bitten.
Union, from Pernambuco, at Philadelphia, lost boat, bulwarks, and monkey sail, split sails, &c.
Baltimore, from Rio for Baltimore, put into Charleston, leaky, threw overboard part of cargo.
Golden Age, at New-York from Galveston, lost jib and fore-sail, off the Woodlands, on the 6th.
General Warren, from New-Orleans for Providence, in N. and N. E. gales, stove bulwarks.
Warren, at New-York from Havana, experienced heavy weather, lost bulwarks, water, &c.
Flight, for Savannah, ashore back of Govérnor's Island, being carried there by the ice.
Mary Kimball, at Marseilles, from New-York, during heavy weather threw overboard part of cargo.
Lucy and Francis, from Brooksville, Me., for Havana.
Louisiana, from Liverpool for Genoa, ashore near Troon.
Horace Beals, at New-York from Alexandria, lost bulwarks, stanchions, fore-top-gallant-mast, and had decks swept in gale.
Jenny Lind, ashore at Provincetown, will prove total loss.
Marcia, at Boston, from New-Orleans, struck on south shoal and unshipped rudder.

BRIGS.

Boston, Galveston, for New-York, was wrecked near Marial, Dec. 21st.
Frederick, Turks Island. for Salem, Mass., put into Newport, R. I., in distress, Dec. 23d.
Excel, at Boston, from Savannah, lost spars, &c., Dec. 3d.
Caribee, Savannah for Bath, Me., was abandoned full of water, and dismasted, Dec. 11th.
Venus, Charleston, S. C., for Boston, was abandoned, dismasted and full of water, Dec. 26th.
Edward, at New-York, lost sails, &c., Dec. 14th.
Florist, (Br.), at New-York, lost sails, spars, &c., Dec. —
Louisa Copeland, Boston, for Bucksville, S. C., was abandoned Dec. —
Norman, at New-York from St. Jago, experienced heavy weather, is badly strained and leaky.
Niagara, abandoned Sept. 6, fore-mast gone by the board, main-mast 30 feet above deck.
Reveille, at New-York from St. Thomas, lost sails, started bowsprit and knight heads, lost head sails, and crew badly frost bitten.
Leviathan, from New-York for Oporto, caught fire and put into Bermuda, badly injured.
Anita Owen, at New-York, from Neuvitas, lost jib-boom, N. of Delaware Bay, crew frost bitten.
Halcyon, put back to San Francisco, Dec. 8th, in distress.
Amonoosuck, at Aspinwall Dec. 23d, from Pensacola, in gale carried away all above fore-mast, main-top-mast, sprung lower-masts.
J. W. Kendall, put back to San Francisco, Dec. 11th, 6 days out, leaky, started stern post.
Brazilian, ashore near Muskegat, went to pieces.
Colorado, put into Santa Cruz, Cal., in distress, lost fore-top-sail and yard, with jib, 2 feet water in hold.
Poconocket, Philadelphia, for Marblehead, went ashore on Goat Island, got off and went to sea.
Cuidad, from Alexandria, Barbadoes, foundered at sea on the 17th November.
Jane, Pictou, for New-York, put into St. George's, Bermuda, lost boat, galley, sails, sprung main masts, top-mast and yards.
Water Witch, Para, for Salem, put into St. George's, Bermuda, leaky, and crew frost bitten.
Walhonding, Demarara, for New-York, arrived at Bermuda, leaky.
Charles, from St. Johns, N. F., at New-York, lost and split sails, stove bulwarks.
Queen Esther, of Searport, from Brunswick, Ga., for New-York, was fallen in with, lat. 38 deg. 42 min., long. 71 deg. 30 min., by schr. A. F. Howe, unmanageable, with 6½ feet water in hold, took off captain and crew.
Grand Turk, at St. Thomas, Dec. 18, from Glasgow, for Halifax, in distress, leaky, lost sails and sprung main-mast.
Tarry Not, before reported, was seen Dec. 28th, in lat. 37, lon. 71, full of water and abandoned.
Lady Seymour, for Halifax, 40 miles East of Highlands, became leaky, gaining on pumps 20 in. in 3 hours, towed back by steam tug.
William Heath, from Kingston for New-York, totally wrecked at Robins Bay, Jam., no lives lost.
Almira, from Georgetown, S. C., for Thomaston, at Newport, lost portion of deck load, giving a port list of 3 strokes.
F. P. Beck, at New-York, from Havana, in heavy gales started cut-water, head-sails, &c.
Nenuphar, ready for sea, was wrecked at Vera Cruz during a snow storm, Dec. 20th.

Zavalla, at Boston, for Richmond, both masts cut away.
William Skinner, Baltimore, for Mobile, wrecked at Spanish Cay, Abaco, Dec. 12th.
Fawn, San Francisco, for Coose Bay, capsized, Nov. 22d, and drifted ashore near Friscam river.
Edward, at New-York, from Jeremie, lost sails, &c.
Florist, at New-York, from Turks Island, lost sails and spars, crew frost bitten.
Whitehall, Cardenas, for New-York, fallen in with Dec. 23d, in distress, taken in tow by steam tug when N. of Barnegat, gale increasing had to let her go.
Judge Hathaway, Porto Rico, for Boston, went ashore on Cliff Point, opposite Scituate, during snow storm, bilged.
Jessie, from Halifax for Boston, Nov. 28th, Dec. 20th put back, sustained some damage.
Vest Ellen, Port au Prince, for Boston, became water-logged, lost rudder and was abandoned.
Norman, at New-York, lost sails, has been strained badly and leaks.
Martha Hill, Pensacola, for Fort Taylor, in crossing N. W. Bar, without pilot, ran on rocks.
Carolina, New-York, for Philadelphia, encountered drift ice, started timber port and leaked badly.
Quadruple, Bermuda for Baltimore, put back short handed, mate and 1 seaman sick.
Andrew Peters, at New-York from Cienfuegos, split sails, &c. 15 inches by the head with ice on bow, after throwing 100 tons overboard.
Wm. Pitt, Philadelphia for Boston, foundered at sea, Dec. 23d, all hands saved.
E. P. Swett, St. Marys, (Ga.), for Portland, captain sick and short of provisions, put into Wellfleet.
Auburn, Philadelphia to Jamaica, abandoned at sea in a sinking condition.
Mary Schmidt, Liverpool, N. S., from Trinidad, experienced heavy gales, short of provisions.

SCHOONERS.

Emily Fowler, went ashore on Pleasant Island, Dec. 28th, is a total loss.
J. A. Paine, was abandoned off Seal Island, N. S., Dec. 20th.
Americus, for Charleston, S. C., put into Wilmington, N. C., in distress, Dec. 25th.
Belcher, for New-York, was burnt off Race Point, Dec. 18th, is a total loss.
Sarah Post, New-York for Rockland, Me., was lost near Harswell, Me., Dec. 14th.
L. A. Surette, Boston, for Argyle, N. S., was lost on Cranberry Head, Dec. 20th.
Sophronia, Philadelphia, for Boston, was abandoned in a sinking condition, Dec. 25th.
Race Rock, Philadelphia for Fall River, was totally lost on Hereford Bar, N. J., Dec. 24th.
Arcade, Quebec for Boston, put into Wilmington, N. C., in distress, Dec. 27th.
E. Peterson, Hampton Roads, Va., for New-York, abandoned in a sinking condition, Dec. 25th.
Albemarle Pantego, Providence, ashore inside Sandy Hook, got off and towed to New-York.
Elmira, spoken Dec. 30th., lat. 38 deg. 36 min., lon. 70 deg. 35 min., had lost deck load and bulwarks, leaking badly, short of provisions and making for nearest port.
Daniel L Sturges, Norfolk for Portland, put into Newport disabled, lost deck load, galley, booms, sails, rigging and boat.
Edna C., having been ashore, was examined and found one side gone, not worth repairing.
Antoinette, Darien for New-Bedford, lost bulwarks both sides, and rail on one side from main to taffrail.
Louis A. Souretee, went ashore at Cranberry Island, total wreck, 2 lives lost.
Mary, was passed Dec. 20th, lat. 42 deg. 50 min., lon. 62 deg. 40 min., full of water and abandoned.
Broadfield, Philadelphia for Boston, 9 days out, lost sails, spars, and short of provisions, spoken and supplied.
Case Amelia, Kingston, Ja., for New-York, put into Key West, leaking badly.
Laura Jane, Baltimore for New-Bedford, sailed Dec. 20th, not heard from.
Cremona, Philadelphia, for New-Bedford, sailed about 20th December, not heard from.
A. S. Eells, Charleston for Boston, reported at Holmes' Hole, loss of sails, boats, &c.
Tennessee, Baltimore for New-Bedford, arrived at Newport, R. I., in distress, Jan. 7th.
Queen, seen off Cape Cod, drifted ashore on Ten Points Island.
Phantom, (Pilot Boat,) drifted ashore on South Side George's Island.
Lenox, Kingston for Quebec, probably lost with 12 persons on board, all hopes abandoned.
Reporter, Wilmington, N. C., for Boston, put into Newport in distress, lost fore-top-sail, boat, part of deck load and other damage.
James H. Deputy, Philadelphia for New-York, drifted ashore in the ice 8 miles inside of Cape May light.
R. C. Stannard, Jamaica for Baltimore, put into Norfolk disabled.
Samuel Frances, from Laguayra, put into Kingston, Ja., in distress, Dec. 13th.
George W. Baldwin, North River to New-Haven, parted chain and driven to sea, from ancho' under great swamp.
Conquest, (Br), Salem for Maitland, N. S., ashore night of Dec. 20th, 10 miles from Vinall Me., total loss.
Mary Frances, Baltimore for New-Bedford, put into Norfolk, lost anchors and chains.
Citizen, Camden, Me., at New-Bedford, from Norfolk, shipped a sea off Hog Island, l boom, boat galley, decks swept, cabin partly filled, fore-sail split, lost jib and flyin
Brunswick, from Bath, drifted ashore in the bight of Long Island, Boston Harbor.
George & Emily, from Norfolk for Portland, is missing.

A. R. Schaler, from Deep River for Baltimore, missing.
Julien, 20 days from Cuba for New-York, put into Bermuda leaking badly; lost sails, spars, boats, and had been run into.
Milwaukie, Bucksport, Me., for Bucksville, S. C., covered with ice, foremast cut away, leaking badly, was abandoned.
C. S. Peaselee, at Philadelphia, had crew badly frost-bitten on passage from Savannah.
Manhasset, collided with schooner Mary Emma, lost cutwater, jib-boom and head-rigging.
Wm. H. Mailler, Philadelphia, for Boston, put into New-London, 22d December, with loss of davits, main-sail torn, and other damage by collision.
Arsene, Covington, for New-Orleans, struck a snag in New Canal and sunk.
Gazelle, Philadelphia, for Boston, lost deck load of coal and boat, bulwarks stove.
Amanda A. Acken, Rappahannock river, for New-York, lost sails; crew taken off by brig Ocean Wave.
Banquet Bartlett, in a gale off Hog Island, lost flying standing-jib, stove bulwarks, lost deck load, and split sails.
Hope U. Gandy, Georgetown, D. C., for Providence, was abandoned at sea December 23d.
George Maule, Baltimore, for New-York, lost fore-mast and bowsprit, was at Lewes, Del., December 31st.
Arcade, Quebec, for Boston, was blown off the coast five times, sprung fore-mast and fore-yard, leaky, lost and split sails, and short of provisions.
Joven Maria, (Mex.), from Tobasco for New-Orleans, capsized night of 26th December within 50 miles of Balize; the owner and cabin boy drowned.
Frederick Reed, Eastport, for Philadelphia, put into Baltimore, loss of bowsprit, head gear and anchor.
Suwasse, New-York, for Wareham, frozen up at Buzzard's Bay.
Josiah Acorn, at Holmes' Hole December 30th, in a gale lost boat, flying-jib, bulwarks stove.
J. J. Taylor, reported missing since August last, sailed from New Orleans for Savannah.
Cincinnatus, sprung aleak when within 5 miles of Thacher's Island, in a heavy blow, December 22d, filled and sank.
Argo, Baltimore, for Providence, lost one anchor, main-boom broken, and had sails split.
Moxo, from Jacmel, at New-York, lost deck load of logwood.
Emeline Peterson, for New-York, was seen last in a sinking condition, boats stove, loss of sails; crew taken off by schooner W. H. Gilliland.
Wm. F. Catterfield, Elizabeth City, N. C., put into Norfolk with lost anchors, chains and sails.
Wing of the Wind, Virginia, in a gale, 3d January, lost main-sail; on the 5th, lost jib, flying-jib, and sprung bowsprit.
Sarah Higbie, Alexandria, for New-York, blown to sea in a gale, sprunk aleak and was abandoned.
Kingfisher, Caribbean Sea, for Baltimore, put into Norfolk with loss of anchors, chains and flying-jib.
J. H. Deputy, Philadelphia, for New-York, drifted ashore in the ice 8 miles inside Cape May light.
Nightingale, Fall River, for Baltimore, was blown off the coast, put into Key West, lost jib.
Mississippi, from Cape Haytien, lost part of deck load of logwood, split sails, &c.
Nancy J. Brayton, at New-York, from Kingston, Jam , split sails, &c.
Plandome, at Savannah, in a gale off Cape Hatteras lost jib-boom and fore-topmast, with sails.
J. W. Faulklin, from Boston, was cut through by the ice coming into Sandy Hook, and was ran ashore on Staten Island to keep from sinking.
Louisa Dyer, Elizabethport, for Providence, put into Newport December 30th, loss of bowsprit and head gear from collision.
Reindeer, Vienna, Md., for Providence, went ashore, on the 8th January, 8 miles below Providence.
Banner, Boston, for Saco, had to return, on account of ice-making in such quantity, to Hull.
Cynthia, condemned at Batavia, was sold at public auction for 21,500 florins.
Martha Washington, in attempting to leave Plymouth harbor, ran ashore.
Isaac W. Conklin was sunk by ice at pier in New-York.
A. B. Neilson, (pilot-boat No. 21), was driven ashore by the ice on Long Island, above the Narrows.
Sylvia, Alexandria, for New-York, blown to sea, sprung aleak on the 29th December; on the 30th was abandoned. with 3½ feet water in hold.
Conquest, (Br.), from Salem for Maitland, N. Y., went ashore night of 20th December, 10 miles from Vilanhaven, Me.
Mary E. Mifflin went ashore in Newport harbor.
Atlantic, off the Cape of Good Hope, October 1st, captain, two mates and six seamen washed overboard; captain only saved.
Mary Ann, from Bath for Boston, was water-logged and abandoned at sea on the 8th December, lat.42 deg., lon 69 deg. 20 min , captain and two of crew frost-bitten; crew taken off by ship Marquette.
Golden Eagle, at Norfolk January 3d, from New-York, lost bowsprit and main-gaff.
Moro, from Jacksonville for Newport, R. I., put into Norfolk with loss of sails, &c.
Palestine, from Alexandria, went ashore on Bullocks' Point; was got off without damage
Isabella, (Br.), from Boston for Charlottetown, P. E. I., was ashore at Red Head, Gulf of Canso.

Chas. B. Prindle left Boston for Yarmouth December 17th; on the 18th, went ashore on Brewster flats.
Patrick Henry, at Pernambuco, ashore, was sold for 5,200 millreas.
Lebanon, from Calais for Middletown, Conn., went ashore at Clinton, Conn., on the 3d January.
Tennessee from Baltimore for New-Bedford, put into Newport in distress, lost boat, galley, sails split.
Mary Ann Williams, Bath, Me., abandoned at sea; crew taken off by ship Marquette.
Henrietta, Philadelphia, for New-Bedford, on the 23d December lost all her sails, bulwarks stove, decks swept; on 27th, spoke ship India, crew being badly frost-bitten, set fire to vessel, left.
John A. Roche, Philadelphia, for Boston, lost, with all on board, December 15th, off Gay Head.
Bew Drop, from Baracoa, in a gale on the 27th December, sprung aleak, had to throw over deck load, cargo fruit and tobacco,
E. C. Howard, from Matagorda, sprung fore-mast, lost jib-boom, jib, fore-topmast, stove bulwarks, split sails, damaged rigging, lost one man overboard.
Flying Eagle, from coast of Africa 20 days, N. of Hatteras, lost boat, davits, main-boom, split sails, and lost wheel.
John D. Phillips, off Cape Elizabeth, lost sails and blown to sea.
J. W. McKee, Baltimore, for Providence, put into Newport in distress, lost sails, boats, water-casks, galley, and thrown on beam ends.

NOTICES TO MARINERS.

Light-house on the Weser, upon the Flat called the "Hohe Weg."—For the convenience of mariners entering the Weser, but by no means to induce them to neglect the use of the lead, a small, white light will be shown from the light-house, at an elevation of 38 feet above common high water mark, which, in clear weather, will be visible at a distance of 7 nautical miles. This light will disappear to those who are nearing too much the black buoy (or starboard) side, near buoys H and J. To those entering the "Dwasgat" it will assume a reddish color, in a line with the red buoy, and will disappear when they reach the line of the black W A buoy. This smaller light will be visible between the bearings of N. by W. ¾ W. round N. to E. by S.
November 15, 1856.

Sea of Azof—Light Vessel off the Sazalnitzk Spit.—Official information has been received at the office of the Light-house Board, that the Russian Light-house Board in the Black Sea has given notice that the light-vessel, hitherto placed at the extremity of the sand bank, known by the name of the Krivaya Kosa or Crooked Spit, on the North shore of the channel, leading up to Taganrog, in the Sea of Azof, has been transferred to the South side of that channel, and is now placed at the outer end of the shoal, which extends for 5 miles from the sandy islets, called Peschanie Ostrova. The light-vessel shows, as formerly, two fixed white lights, vertical, respectively 34 and 22 feet above the level of the sea; and the upper one should be visible. in clear weather, from the deck of a ship, at a distance of 7 miles. The outer point of the shoal in question, at which the light vessel is placed, lies at 11 miles from the nearest part of the mainland, at Sazalnitzk, in lat. 46 deg. 56 min. 30 sec. N., lon. 38 deg 12 min. E. of Greenwich, nearly. It is a dangerous bank for vessels going towards Yeisk or Taganrog; when bound to or from the latter, the light vessel should always be left to the South. The extremity of the Krivaya Kosa, or Crooked Spit, where the light-vessel formerly laid, will be henceforward marked by a red buoy.
December 10, 1856.

Changes at Moose Peak and Manheigin Light-houses, Maine.—In order to diminish the possibility of mistaking Moose Peak light for Petit Menan light, the interval between the flashes in the former light will, on the 1st of April, 1857, be changed from 2 minutes to 30 seconds; so that from and after that date, Moose Peak will be, as usual, a revolving light, but the interval between the flashes will be 30 seconds. On the same day, the time of revolution of the Manheigin light will be altered from 2 minutes to 1 minute, and the red flash now shown will be thereafter discontinued; so that, from and after April 1st, 1857, the interval between the flashes will be 1 minute, and all the flashes will be of the natural color.
By order of the Light-house Board.
December 12, 1856.

The spar buoy heretofore marking the rocks off Napatree Point, near the entrance to Fi Island Sound, R. I., has been removed, and a second class iron can buoy, painted red, No. 4 in its place.
By order of the Light-house Board.
December 24, 1856.

LIGHT-HOUSE NEAR CRESCENT CITY, CALIFORNIA. — A fixed, white light, varied by flashes, 4th order of Fresnel, illuminating 315 degrees of the horizon. The house consists of a keeper's dwelling, of stone of the natural color, of one story and a half, with a low tower of brick, plastered and whitewashed, rising from the centre, and surmounted by an iron lantern, painted red. It is situated on the seaward extremity of the island point forming the Southern and Western sides of the harbor, and at an elevation of 45 feet above the high sea level. The light is 80 feet above the same level, and should be seen in a favorable state of the atmosphere, from the deck of any sea-going vessel, 14 nautical or 16 statute miles. The latitude and longitude of the light and magnetic variations in the vicinity, determined by the Coast Survey, are as follows: lat. 41 deg. 44 min.. 34 sec. N., long. 124 deg. 11 min. 22 sec. W. Magnetic variations, 17 deg. 45 min. E. This light will be exhibited for the first time on the night of the 10th of December, 1856, and thereafter until further notice.

LIGHT-HOUSE NEAR SANTA BARBARA, CALIFORNIA. — A fixed red light, 4th order of Fresnel, illuminating the seaward half of the horizon. The light-house consists of a plastered dwelling, of one-and-a-half stories, with a lower tower, also plastered, rising through the roof. It is situated at an elevation of 146 feet above the sea, 2 miles South-westerly from the landing at Santa Barbara, and about 550 feet from the brink of the bluff. The light is 180 feet above the same level; but from the red color, and the low order of lens, it will not be visible for the range due to that elevation. It should, however, in a clear atmosphere, be seen 10 or 12 miles. The latitude and longitude of the light, and the magnetic variations in the vicinity, as given by the Coast Survey, are, as follows: Lat., 34 deg. 23 min. 35 sec, N. Lon., 119 deg. 42 min. 05 sec., W. Magnetic variations, 13 deg. 30 min., E. The light will be exhibited for the first time on the night of the 1st of December, 1856, and every night thereafter until further notice.

By order of the Light-house Board.

November 12, 1856.

CORRECTNESS OF CHARTS. — Underwriters' Rooms, Liverpool, Dec. 2. — Extract from a letter dated Beypore, Oct. 17, 1856: In London I got a new chart of the Malabar Coast, on a large scale, from Norrie, corrected up to 1856, on which I find this part of the coast laid down nothing short of 25 miles too far to the eastward. I have on board two chronometers, on which any amount of confidence may be placed. The Greenwich time of each has not differed three seconds since I left England, and I may safely say they are correct to one mile of longitude. I believe my ship to be anchored in 11 deg. 8 min. 40 sec., N., lon. 75 min. 45 min 20 sec., E., about 1¼ miles from the shore. By Norrie's chart, we ought to be in lat. 11 deg. 10 min., N., lon. 76 deg. 6 min., E.

LEWES, Del., Dec. 30.—The Five Fathom Light Boat has drifted from her moorings, and is now in the harbor.

The Can buoy off Ohio Ledge, in Narragansett Bay, has been carried by the ice about two miles down the bay, where it remained the morning of the 7th inst. It should be replaced immediately.

LIGHT-HOUSE IN WINTER HARBOR, FRENCHMAN'S BAY, MAINE. — In conformity with the notice of June 12, 1856, the Light-house erected on the Southern point of Mark Island, in Winter Harbor, Frenchman's Bay, will be illuminated for the first time on the evening of Jan. 1, 1857; and the light will be kept burning during every night thereafter from sunset to sunrise. The light-house is a cylindrical brick tower, painted white, having attached a keeper's dwelling of wood, painted brown. The illuminating apparatus is a 5th order of lens, showing a fixed white light, of the natural color, at an elevation of 37 feet above high water, and which should be visible, in good weather, at a distance of 11 nautical or 13 statute miles.

By order of the Light-house Board.

December 22, 1856.

LIGHT-HOUSE, ENTRANCE OF HUMBOLDT BAY, CALIFORNIA.—A fixed, white light, 4th order of Fresnel, illuminating the entire horizon. The house is situated on the North Sands, three-fourths of a mile from the Inlet, and about mid-way between the bay and sea shores. It consists of a keeper's dwelling of one and-a-half stories, with a tower rising 21 feet above the roof, from the centre, both plastered and whitewashed, and surmounted by an iron lantern, painted red. The light is 53 feet above high water or spring tides, and should be seen in clear weather, from the deck of a sea-going vessel, 12 nautical or 14 statute miles. The latitude and longitude of the light, and the magnetic variation in the vicinity, determined by the Coast Survey, are as follows: Lat. 40 deg. 46 min. 04 sec. N; long. 124 deg. 12 min 21 sec. W.; mag. var. 17 deg. 04 min. E. (April, 1854.) The light will be exhibited for the first time on the night of the 20th of Dec., 1856.

By order of the Light-house Board.

HARTMAN BACHE, Maj. Topog'l Engs. Br. Major.

Office 12th Light-house District, San Francisco, Cal., Dec. 1, 1856.

Letter to the Secretary of the Treasury, communicating extracts from a report of Lieut. C. R. P. Rogers, U. S. N., Assistant Coast Survey, upon the development of Edwards' Shoal, and the existence of Shoal Ridges Northward of Great Point Light, Nantucket Sound.

COAST SURVEY OFFICE, Dec. 8, 1856.

Sir:—I have the honor to communicate as, in part, the result of a close hydropathic survey of Nantucket Sound, completed within the present season, the farther development of Edwards' Shoal, by Lieut. Com. C. R. P. Rogers, U. S. N., Assistant in the Coast Survey, and the discovery of shoal ridges of sand lying Northward of Great Point Light.

The existence of Edwards' Shoal was communicated to the department in my letter of November 6th, 1856. The following extracts from the report addressed to me by Lieut. Com. Rodgers, contain the result of his subsequent minute examination, and a description of the character of the sand ridges referred to:

"At the end of the last season I had the honor to report the discovery and partial examination of a shoal South of the Cross Rips, in Nantucket Sound, which, with your sanction, has been called Edwards' Shoal. This was carefully surveyed in the operations of my party during the season just ended. It lies in the channel way South of the Cross Rips, surrounded by deep water, and its crest is a narrow ridge more than half a mile in length, with only 10 and 12 feet water upon it. It may, consequently, be considered worthy of special attention, and should at once be carefully buoyed.

"From the Eastern side of this ridge, which rises like a wall in the sea, the water deepens abrubtly to five fathoms, and at its Southern end, within a space of a few yards, from eleven feet to eight fathoms. On the Western side the ridge falls off more gradually, and from its centre a spur of shoal makes out to the Westward for more than a quarter of a mile, with sixteen and eighteen feet water upon it.

"The shoal is composed of hard sand. Its Northern edge is distant from the Nantucket Light-boat 1¼ nautical miles, and from the Southern Cross Rip about ¾ of a mile. In the channel, between it and the Cross Rips, we found from 6 to 10 fathoms water.

"It is remarkable that a shoal like this, so constantly passed by vessels beating through the Southern channel of Nantucket Sound, should have been so long unknown, and particularly that it should have escaped the notice of pilots. Its discovery forcibly illustrates the value of the comprehensive methods employed in the Coast Survey, and the practical utility of making the hills and valleys in the sea as well known as those on the land.

"I beg leave to report, also, that the developments of our survey during the season exhibit sand ridges a little more than 2 miles to the Northward of Great Point Light, bearing from it N. 1 deg. 30 min. W. to N. 22 deg. 30 min. W., and having in some places on their crests as little as 19 feet water. They lie parallel to each other, in a general direction about N. N. W. and S. S. E., are short and very narrow, and have 5 and 6 fathoms of water around and between them."

I would respectfully request authority to publish this communication in the usual form, and also, that a copy may be transmitted to the Light-house Board for information, as connected with the recommendation of Lieut. Com. Rodgers in regard to placing a buoy on Edwards' Shoals. Very respectfully yours, A. D. BACHE, Supt. U. S. Coast Survey.

NAVIGATION OF ST. VINCENT'S GULF. — The following letter on this subject appeared in the South Australian Register, of Oct. 1:—

Sir—It is not generally known that a dangerous bank for ships of heavy draught of water exists on the Eastern side of Troubridge Island. Its bearing will be from about E. by S. to N. E. from that island, distant from 5 to 8 miles. The least water at present found would be 21 feet at the lowest tide. There is a depth of 7 fathoms between the bank and the island at a distance of about 3 miles. The exact position, and the extent of the danger, not being known, and not being placed on any chart, I think an immediate survey should be made, more particularly for the following reasons:

1. Should, from any circumstance, the light on Troubridge Island not be discernable, a vessel sounding or coasting on the bank referred to would immediately conclude she was to the Westward of the light, and had shoaled her water on the Troubridge Shoal, thereby causing her to steer a course and run a distance that would bring her into dangerous proximity with the coast on the East of the Gulf, and possibly on a dead lee shore.

2. It is situated in the very course given in the sailing directions for ships passing through Troubridge Shoal up the Gulf towards Port Adelaide; and in a heavy sea, a vessel drawing 1 17 feet of water might strike on it.

3. Another forcible reason why this danger should be correctly known is that it is repre that ships bound down the Gulf, and meeting with heavy Westerly weather, could work in Troubridge Shoal, and lie in perfect security; whereas, to attain that anchorage, vessels at the Eastward would have their safety endangered by having to work directly over the bank.

Not being in a position myself to make the necessary survey, I have felt it my duty as a to make the existence of this danger known through the press, in order that masters of (and especially those of large tonnage), should be on their guard in passing Investigator up the Gulf; and by giving it publicity, it may, possibly, cause a survey to be made, and tent of the bank, with the depth of water over it, correctly ascertained.

I am, Sir, &c. RICHARD T

LIGHT-HOUSE AT KENNEBUNK PIER, MAINE.—In conformity with the notice of June 1, 1856, the light-house erected on the pier head, at the mouth of the Kennebunk river, will be lighted for the first time on the evening of Jan. 1, 1857, and the light will be kept burning every night from sunset to sunrise. The light-house is a square, wooden structure, painted white, having a lantern on the outer end. The illuminating apparatus is a 6th order lens, showing a fixed, red light, from an elevation of 21 feet above high water, which should be visible, in clear weather, at a distance of 8 nautical or 9 statute miles.

NOTE—Mariners should be careful not to mistake this light for Goat Island light, in Cape Porpoise harbor, which is only two miles north of it, and which is of the natural color (white). They are informed that but 3 feet can be carried over the bar at low tide. The ordinary rise of the tide is 9 feet.

By order of the Light-house Board.

December 22, 1856.

In accordance with previous notice, the fixed light exhibited at the Faulkner's Island light-house, Long Island Sound, N. Y., has been discontinued, and a fixed light, varied by flashes, substituted for it.

A flash occurs every minute and a half, and the interval of eclipse, between the flash and fixed light is thirteen seconds.

By order of the Light-house Board.

A. LUDLOW CASE, Light-house Insp. 3d dist.

New-York, December 31, 1856.

In accordance with previous notice, the Cornfield Point Light-Vessel has been placed upon her station, South of the Long Sand Shoal, Long Island Sound, N.Y. She is moored near the centre of the shoal, and about one-eighth of a mile from it, in 7½ fathoms water, sandy bottom. She is sloop rigged, and shows a single fixed light, of the natural color, 40 feet above the water, which should be seen, under ordinary states of the atmosphere, 10 nautical miles; has a square cage-work day-mark at the mast head, and is painted red, with the name of the station in black letters on each quarter. A bell will be tolled in foggy weather. The approximate latitude, as shown by the Coast Survey Chart, is 41 deg. 13 min. 30 sec. N.; lon. 72 deg. 22 min. 50 sec. W.

COMPASS BEARINGS.—Cornfield Point, Ct., N. Faulkner's Island Light-house, W. ¾ N. Plum Island Light-house, N.Y., S. E. by E. ¾ E. Little Gull Island Light-house, N.Y., E. S. E. ¾ E. Bartlett's Reef Light-ship, E. by N. Saybrook Light-house, Ct., N. E. ¾ N.

By order of the Light-house Board.

A. LUDLOW CASE, Light-house Inspector, 3d Dist.

New-York, January 6, 1857.

PILOTAGE OF CAPE FEAR RIVER, NORTH CAROLINA.—An act was recently passed by the Legislature of North Carolina, and became a law on the 31st ult., in relation to pilot's fees on Cape Fear River. The following are the sections :—

Sec. 1. Be it enacted by the General Assembly of the State of North Carolina, and it is hereby enacted by authority of the same. That when any master of a vessel shall refuse a pilot in going either up or down the Cape Fear River, then each pilot so refused shall be entitled to the full pilotage in the same manner as he would have been had he been actually employed for the purpose of piloting such vessel.

Sec. 2. Be it further enacted, That so much of the 17th sec. of the 85th chap. of the Revised Code as may conflict herewith, be, and the same is, hereby repealed.

Sec. 3. Be it further enacted, That this act shall be in force from and after the ratification thereof.

BILLINGSGATE ISLAND LIGHT-HOUSE, WELLFLEET BAY, CAPE COD.—Owing to the serious injuries sustained by this Light-house during the last severe gale, the light is extinguished, and will not be again exhibited until further notice.

By order of the Light-house Board.

C. H. B. CALDWELL, L. H. Inspector, 2d Dist.

Boston, Jan. 10, 1856.

The Bell Boat off Charleston ship Bar has been removed from her station for repairs.

C. MANIGAULT MORRIS, Light-house Inspector, 6th Dist.

Charleston, S. C., Jan. 9, 1857.

The small beacon light lately placed on the extremity of Cape Hatteras, having been damaged by a storm, is discontinued for the present. Due notice will be given of its renewal.

By order of the Light-house Board.

January 8, 1857.

The buoy marking the Eastern edge of the channel, at the entrance of the Crook, below Fox Point, which broke away a short time since, has been replaced.

BISHOP AND CLERK'S LIGHT-VESSEL, VINEYARD SOUND.—This Light-vessel has been moved by the ice two miles west of her station. She will be replaced as soon as possible.

POLLOCK RIP LIGHT-VESSEL.—This light-vessel broke a drift during the last gale, and is now off her station. She will be replaced at the earliest opportunity.

By order of the Light-house Board.

Boston, January 20, 1857.

Notice is hereby given that the nun and can buoys in Vineyard Sound and Buzzard's Bay will be taken up for the winter, and their places supplied by spar buoys, of corresponding colors and numbers.

The Philadelphia North American says—"About a week since it was reported that the light-boat stationed in the vicinity of the Capes of the Delaware, broke from her mooring, and was compelled to come within the Breakwater, thus leaving a dangerous shoal entirely without indication to vessels entering the Bay. In consequence of the absence of the boat, the ship Westmoreland, with a large and valuable cargo, made a narrow escape from running on the rock on Friday last, in which event she would most probably have been wrecked. This deficiency should be attended to immediately.

BOMBAY HARBOR.—Notice is hereby given that a *fixed green light* will be shown on the Dolphin Rock on and after the night of the 1st of January, 1857. From high water mark of spring tides, the height will be 20½ feet to the centre of the light, and 36½ feet at low water mark of spring tides. It will bear from the Sunken Rock Floating Light N. 4½ E., distant 1-89 miles. Pilots or others, after rounding the Rock Light-vessel at a cable's length, should steer so as to pass the Dolphin Light at the same distance, keeping it on the port side.

J. W. YOUNG, Commander.

Master-Attendant's Office, Bombay, Oct. 10, 1856.

CONSIGNEES, MASTERS, AND LIGHTERS, AT GEELONG.—We find the following declaration on the respective rights and duties of consignees, masters and lightermen, in the proceedings of the Geelong Chamber of Commerce. The motion, of which notice had been given by Mr. McKellar, "that the committee consider the subject of the delivery of the goods by lighters" was brought up under discussion, and after careful examination of the law relating thereto, it was clearly ascertained that it is the duty of the master of the vessel, as soon as the arrival of the ship has been reported, to give notice thereof to the owners or consignees of the goods on board; that he cannot escape from his liability by immediately landing goods at a public wharf, without giving such notice, because a delivery at the wharf is not a delivery to the consignee; that if they are landed without such notice being given, and are destroyed upon the wharf by an accidental fire before the consignee has had an opportunity of taking them away, the shipowners will be responsible for the loss; but that the lighterman, or master of the vessel, is bound to keep the goods on board, or on the wharf, at his own risk, for a reasonable time, to enable the consignee, or his assigns, to come and fetch them; and that the lighterman is not released from this responsibility until he has obtained a receipt for the goods upon their delivery to the consignee.

LIGHT VESSELS IN CHESAPEAKE BAY.—Information has been received at the office of the Light-house Board that the light-vessel stationed off Smith's Point, mouth of the Potomac River, and the light-vessel stationed at Hooper's Straits, entrance to Tangier Sound, have been driven from their stations by the ice. Due notice will be given of their return.

January 12, 1857.

LIGHT-HOUSE NEAR EAST END OF EDGEMOGGIN REACH, MAINE.—In conformity with the notice of Sept. 12, 1856, the light-house erected on Fly's or Green Island, near the east end of Edgemoggin Reach, will be illuminated for the first time on the evening of Monday, Feb. 2, 1857, and the light will be kept burning during every night thereafter, from sunset to sunrise. The light-house is a cylindrical brick tower, painted white, having attached a keeper's dwelling, of wood, painted brown. The illuminating apparatus is a 5th order lens, showing *a fixed white light of the natural color*, at an elevation of 26 feet above high water, which should be visible, in good weather, at a distance of 9 nautical or 10½ statute miles. The approximate latitude from the most reliable charts is 44 deg. 14 min. N., and the long. 68 deg. 31 min. 30 sec. west of Greenwich.

By order of the Light-house Board.

W. B. FRANKLIN, Eng. 1st Light-house Dist.

Portland, Me., Jan. 10, 1857.

Light-house at Absecum, New-Jersey. — In conformity with the notice to mariners of 10th November last, notice is hereby given that the tower and keeper's dwelling at Absecum, N. J , are now completed, and the light will be exhibited therefrom, for the first time, at sunset on the 15th of January, 1857, and every night thereafter from sunset to sunrise. The tower is of brick, unpainted, and is surmounted by an iron lantern painted black. The illuminating apparatus is catadioptric of the 1st order of Fresnel, showing a *fixed white light*. The focal plane has an elevation of 167 feet above mean tide ; and the light should be seen, under favorable circumstances, from the deck of a vessel of ordinary size, at the distance of about 20 nautical miles. The approximate position of this light, as deduced from the Coast Survey Chart, is lat. 39 deg. 22 min. north, long. 74 deg. 25 min. west of Greenwich.

By order of the Light-house Board.

EDW'D M. YARD, Light-house Inspector.

Philadelphia, January 8, 1857.

St. Croix Light-house, Maine.—In conformity with the notice of July 17, 1856, the light-house erected on Big Island, in the St. Croix river, will be illuminated for the first time on the evening of Monday, February 2d, 1857, and the light will be kept burning during every night thereafter, from sunset to sunrise. The tower is above the south end of the keeper's dwelling, and the whole structure is of wood and painted white. The illuminating apparatus is a 5th order lens, showing *a fixed white light of the natural color*, at an elevation of 71 feet above high water, which should be visible, in good weather, at a distance of 14 nautical or 16 statute miles. The approximate latitude from the most reliable charts is 45 deg. 06 min. 30 sec. N., and the long. 67 deg. 08 min. 30 sec. west of Greenwich.

By order of the Light-house Board.

W. B. FRANKLIN, Engineer 1st Light-house District.

Portland, Me., Jan. 10th, 1857.

The Halifax (N.S.) Recorder states that the light-house on Devil's Island, in the harbor of Halifax, originally bore a bright red light, but that the Board a few months since substituted a clear white light for the red one, without giving any notice whatever that such change had been made. The consequence is, that one vessel has already been wrecked near the entrance of the harbor, the captain, seeing a clear white light instead of a red one, mistaking it for Sambro Light. Mariners bound to Halifax will hereafter be on their guard.

The new Light-house on Cape Race, Newfoundland, was lighted for the first time on 15th ult.

The Frying Pan Shoals Light-boat parted from her moorings in a gale on the 14th inst.

The iron beacon on the S. E. point of the Romer is reported to be broken down by ice on the 21st inst. If it is found to be entirely gone, or so as not to mark the point, a spar buoy, painted red, will be placed at the edge of the channel opposite its point, at the earliest opportunity.

By order of the Light-house Board.

New-York, Jan. 23, 1857.

OUR STATE ROOM.

The Amendatory Naval Reform Bill has passed Congress, and now only awaits the President's signature to become a law, which, *if* it obtains (?), provides another Board or Court of Inquiry, whose duty it shall be to *re*-examine the physical, mental, professional and moral fitness of any officer who was dropped, furloughed or retired by the operation of the Act of February, 1855.

This Bill has undoubtedly passed Congress without sufficient examination of its scope. The Senate, with the Executive, already had ample power to correct whatever errors may have been committed under the Act to promote the efficiency of the Navy. The few exceptions which exist to the faithful carrying out of this Act, are only such as are the accidents of all laws, and the action of the Amendatory Bill involves a renewal of the fruitless discussion which so unnecessarily took up the time of the last session. A new Board for the purpose here designated, will not only have to go over the ground again, but their decision will either doubly condemn those who risk it, or reproach the judgment of the previous Board.

Hence it may be perceived that the duty, here contemplated necessarily *dooms* the members of the Court of Inquiry to certain condemnation, by either the one party or the other, in every case on which they have to pass judgment, and will finally end in increased dissatisfaction. It is a step *backward* in the progress of Naval Reform.

The executive session of the Senate is the court, and the *only* court, which should pronounce on the fitness for office under executive nomination, and this, with the provision for one year's duty pay of all officers who were dropped by the efficiency Act, is amply sufficient to meet every exigency under the law.

Sec. 5. "*And be it further enacted*, That captains in command of squadrons shall be denominated flag officers," is quite another matter, and seems to authorize only another name for what has heretofore been obnoxious to our law-makers.

What advantage such a title has over Admiral can hardly be perceived. It seems to be virtually a new grade, ranking Commodore; but its true interpretation must wait for adoption to the *customs of the service* and the exigencies of rank, as established by other nations.

The Resolute.—We regret that the *order*-loving Capta[illegible], aided by our Minister, nipped in the bud the international co[illegible] we, on this side of the water, were so ready to extend.

Such an agreeable kind of diplomacy fosters bro[illegible] be encouraged by *extra* Naval regulations, as they [illegible] *Queen's regulations* on the other side. The *Res*[illegible] salutes, though *one* was unprovided for, except by [illegible]

pleasing to reflect upon the alacrity of the officers of our Navy, as well as municipal government, in showing the fraternity of feeling which pervades the *one* race, though two nations, who would only strive in demonstrations of love.

ANOTHER ARCTIC EXPEDITION is on the tapis in London. This, it is proposed, shall consist of three parties—one overland, another by way of Behring's Straits, and a third by way of Davis' Straits.

The *Times*, and most of the other leading journals, are opposed to this, on the ground that the possibility of life to the parties sought for is now preposterous. On the other side, Dr. Rae and other scientific travellers conversant with the Arctic regions, support the possibility that Sir John Franklin and party may yet be found among the Esquimaux, and they support this by other *scientific* reasons for a new expedition, based on the unfinished work of discovery in seas *beyond* the ice-bound polar walls, which have but just been scanned. The *gist* of the reasons for a new expedition mostly consist in a meritorious pride of English navigators, in a determination to regain a *first* position, which she has lost in the indefatigable KANE.

Dr. KANE's health, we are happy to learn, is improving, and we trust he may have many years yet to enjoy the honors which he has so nobly earned.

MEDALS FOR THE OFFICERS OF THE ACRTIC EXPEDITIONS.—Resolutions have been adopted by the Senate, empowering the Secretary of the Navy to present appropriate medals to Dr. Kane and his companions; and the Legislature of New-York has voted a similar honor to Capt. Hartstene.

NEW-YORK.—The *Wabash* arrived on the 11th ult., with the officers and crew of the *St. Mary's*, relieved across the Isthmus.

The *Wabash* ran ashore at Aspinwall, and is supposed to have carried away part of her false keel. She sustained *further* loss of copper on coming into port here, by the ice.

Preparations are now (20th Jan.) making, as fast as the ice will permit, for putting her in the Dry Dock for repairs.

The *Falmouth* is all ready for sea, and will proceed as soon as the ice will permit. The following is a correct list of her officers:

Commander—E. Farrand; *Lieutenants*—George W. Rodgers, Ex-Officer; W. W. Pollock, Samuel R. Franklin, Wm. McGunnagle, Joseph S. Skerritt; *Acting Master*—George Brown; *Surgeon*—John J. Abernethy; *Assistant Surgeon*—Wm. W. Page; *Purser*—John P. Abbott; *Passed Midshipmen*—Wm. L. Bradford, F. M. Ramsey, J. G. Walker, M. C. Campbell; *Boatswain*—E. B. Bell; *Gunner*—F. A. Cunningham; *Carpenter*—John Stimpson; *Sailmaker*—John North.

The *Niagara* has been put under steam to try her engines, and they are reported to be *perfect*, but they are noisy, and the valve gear vibrates, which

we think is objectionable. She will probably be ready for a trial trip in about six weeks.

PHILADELPHIA.—The *Union* lies a little below the Navy Yard covered with ice and mud. She is scarcely worth cleaning, her chief value consisting in her copper;—will never be of any use, except *numerically* to fill up the list of *war* vessels. The Navy would be quite as well off if several other vessels should, in like manner, prove themselves *un-float-worthy*.

The *Preble* has been converted into a Receiving-ship in place of the *Union*.

The *Minnesota* is ready for sea, except her rigging.

The *Saranac* is progressing in repairs as fast as possible, considering the weather.

The present number of workmen in the Yard is about five hundred.

A Court-Martial is in session for the trial of Commander James H. Rowan and other officers of the U. S. brig Bainbridge. The Court consists of Capt. Wm. I. McCluney, President; Captains Wm. H. Gardner, Wm. W. McKean, Charles Lowndes, Geo. M. Hollins, John Marston; Commanders James L. Lardner, Wm. W. Hunter, and Henry K. Thatcher. Commander Garret R. Barry appeared as Judge Advocate.

ANNAPOLIS.—Purser E. C. Doran has been detached, and Purser Harwood ordered in his place.

Passed Midshipman J. S. Barnes has been ordered as Assistant Professor of Ethics in place of Lieut. S. R. Franklin, ordered to the *Falmouth*.

MEDITERRANEAN.—The *Susquehanna* and *Congress* were in *winter-quarters* at Genoa on the 19th December. These *two* ships have been doing the service of *one* only ever since the *Susquehanna* has been on the station, and have been usually fast together—the *Susquehanna* being *de-tailed* by the Commodore to tow the *Congress* whencesoever he may wish to go. It would be much more economical for the government to *charter* a smaller steamer than the *Susquehanna* for this service, until the smaller steamers so much needed (on this station especially) shall be provided for, to much more effectually do all the duties required by such ships, at less than half the cost.

As usual, when other occupation is unprovided, a Court-Martial was in session, at last dates, on board the *Congress*.

The *Supply* encountered a terrific storm, 30th November, some sixty miles from Malta, which for a time jeopardised [illegible]els, which had to be strapped down on their knees for seven day[illegible]ased, however, they were found not to have suffered any. The [illegible]w on her way home.

AFRICAN SQUADRON.—Nothing [illegible] November, from the *St. Louis*, off St. Paul de [illegible] do in the

general wants of commerce than the suppression of the slave trade. Those who engage in this last occupation find no difficulty in pursuing it, so far as pertains to our squadron, which leaves gaps of five hundred miles apart between the cruisers. Two small steamers on the coast would watch more coast than *six* such squadrons as we now have.

PACIFIC SQUADRON.—The *Aspinwall Courier*, of the 3d ult., says: "Com. Mervine, commanding the U. S. Pacific squadron, and for several months stationed at Panama, for the protection of his countrymen and their interests on the Isthmus, paid our city a visit yesterday."

The *Independence* and *St. Mary's* were at Panama on the 11th ult.

MRS. MARY TABB MCCREERY died in Leesburg, Va., on the 21st ult., in the 83d year of her age. She was the widow of John McCreery, of Petersburg, Va., and the mother of the gallant George M. McCreery, Lieutenant of the U. S. Navy, who was lost in the *Grampus*, and of Dr. Stephen A. McCreery, Surgeon, U. S. Navy, who met a like fate in the *Albany*.

WASHINGTON, Jan. 15.—Mr. Pelton presented a memorial from two hundred ship-owners, merchants and pilots of New-York, recommending the passage of "Rogers' Marine Signal" bill.

COLORED SEAMEN IN CHARLESTON HARBOR.—The bill now under discussion in the Legislature of South Carolina, allows colored seamen arriving at that port to remain on board, instead of being sent to jail as heretofore, the master of the vessel giving bonds that they shall obey the laws of the State. In case the law is violated, or the seaman is found beyond his vessel, the bonds are forfeited, and the Act of 1835 resumes its full force, as it respects the offending parties.

BOILER-ENGINEERING.—A correspondent on page 348 opens a discussion on Boiler-Engineering, in a manner calculated to challenge the advocates of vertical tubular boilers to show their reasons for preferring the same, and we trust some of them will accommodate him by throwing light upon the subject.

L'Clair alludes to the Montgomery Boiler in terms of prejudice. We think it is evident from his statements that he knows evry little about it, and hence it is not surprising that he inquires for more light. Some of the largest manufacturing establishments in the United States are now using this kind of boiler, and have been using it for years with entire satisfaction; the ground of preference being economy of cost, space, fuel and repairs.—EDS.

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SHIP-BUILDING.

If there is one department of scientific knowledge more than another which demands an investment of all the energies of the mind in the mechanical world, it is that of ship-building. In every other art the majesty of science holds out the sceptre of progress, and new achievements are the result; while in ship-building traditional knowledge broods over the productions of philosophy, and the regal mandates of hereditary wisdom withholds the sceptre of improvement, and sets bounds to the widening orbit of genius, beyond which it cannot pass. The pulsations of mind upon this great subject bear the impress of nationality in every maritime country; and in every age of the world there have arisen those who, by geographical position, or by love of adventure, have engaged in martime pursuits. And whether we push our inquiries into the years of antiquity, and take a historical picture of the Sidonian ship-yards, or at a later period watch the movements of the founder of the English monarchy in his determination of the advantages of long vessels over short ones, or, in our progressive march, witness the folly of Spain in the construction of short ships of war with great depth—a practice not entirely obsolete, even at the present time—we shall discover that science and practice are inseparably connected with success in this complicated art. Almost from time immemorial the English government has been regarded as the exponent of national advancement in ship-building throughout her widely-extended territory; hence it is no marvel that her maritime laws should be regarded as the best, and that they should be incorporated with the march of commerce in other lands; but it is surprising that the United States should (notwithstanding her intuitive inklings after the customs of the Old World) have the largest commercial list of vessels on the globe.

If the geographical position of the United States were only commensur-

ate with that of England, their form of government must render them the arbiter of commercial destiny. But we should endeavor to investigate this important question by the light of mechanical rather than of political or geographical science, and in doing this we must go back to the time when the United States were colonies, and only recognised as such by England, or take a more remote position, at a time when the Spanish galleons of the Armada exhibited the folly of constructing ships of war with more than two lines of bristling batteries, and taught the world a lesson in the consequent loss of that memorable fleet, which should never have been forgotten, in the consequences of disproportioned depth.

But let it be remembered that pride and ambition take the royal road to science, and as a consequence we find the same characteristic significance in the number of decks of admiralty flag-ships, as though the power or security of a fleet consisted in the altitude of frowning bulwarks. It requires but an ordinary share of intelligence to discover, that if from the laws of flotation, they had failed to learn that such ships would be the first in the fleet to be disabled by stress of weather, if exposed to the violence of the storm, the laws of common-sense were fully adequate to teach this lesson. In every subsequent age of the commercial history of England, we find the same incongruities protruding through the vessels of the time. By the influence of the East India Company, the laws of admeasurement were adjusted to the satisfaction of that great monopoly, which laws are the fruitful source of more disaster than every other. As contagion spreads by contact, so error widens the orbit of its influence by imitation, and the same heterogeneous code of anomalistics are found in the American navy; its enormity, however, is less apparent in England than in the United States, consequent upon the apparently less rapid march of improvement in the country's marine. The legislation of England which gave laws for the measurement of vessels, adapted itself to the wants of this great monopoly, regardless alike of the wants of commerce and of security to human life. It was upon this hypothesis that the tonnage-laws found their significance—that inasmuch as the armed portion of an Indiaman was not adapted to commerce, it should not be measured; and from this law has arisen more loss to life and treasure than from all other laws connected with maritime pursuits, and although England, at a later period, improved her laws of admeasurement by legislation, the United States are still holding out the same false beacon to the mariner, by offering a premium to the owners of unsafe ships, in the difference between the real and apparent bulk of vessels sanctioned by law. The wants of the two countries, it might be naturally supposed, would be the basis for such estimate of the size and peculiarities in the forms of vessels as might be called for, and while in England the pride and strength of the nation is her navy, in America the national

bulwarks of defence are found in the merchant marine, which, (under a wholesome tonnage-system), in a brief period, and at a moderate cost, may be rendered more formidable than the combined navies of the world, because the size and form of the vessels are more nearly adapted to the necessities and exigencies of the country than those of the government are found to be. This disability arises from two causes; first, the government or the officer assumes that a commission in the navy necessarily implies an enlargement in the amount of knowledge in mechanical science; and second, influence takes the place of wisdom. It is, perhaps, to a very great extent, consequent upon experimental ship-building that the United States is indebted for her enviable position as the first nation on the globe in the utility and symmetry of its vessels, and yet the best-informed ship-builders in this country will not hesitate to say that ship-building is but in an infantile state.

Whatever may have been the prevailing opinion relative to the wants of commerce, nature's law of utility is the best yet discovered for the construction of ships. We may however be allowed to suggest that utility may not be found in the principal dimensions of a vessel, or in the amount of cargo she may be able to carry above her nominal tonnage, nor yet in mouldings and ornamental externals, as is too often assumed. The great and most important quality in ships has been almost entirely overlooked. If we are asked in what utility in ship-building consists, we might safely answer—fitness for the purpose and proportion to effect the object designed, and still, what have we learned from this definition of utility? What do we know of all that pertains to the perfect ship? We see her as a thing of life, laud her design, and yet are unable to examine the index of her qualities. Where is the index of perfection? Who can tell? Are ships only built to enrich the owner at the expense of human life? It would seem so when we consider the long list of disasters which make up a large proportion of the news of the daily press. We seem to regard it as a matter of necessity that both calm and storm should furnish victims for a watery grave, and yet we hear perfection spoken of in the art of building ships. So little is known of the science of ship-building that the best and most appropriate locality for any single point in the long catalogue of cal focals has never yet been discovered. It is a truism that know the most of the science of ship-building have only learned know but very little, and yet they never could have arrived now are, without the aid of practical knowledge. How often ha uals discovered that after days and months of study upon the best for a single point, which is supposed to be a key to all the rest, student find that a change in the position of one power, by an alt the model, destroys the appropriate determination of all others.

we chagrined at the boasted improvements of this improving age in ship-building, and our animadversions on the incongruities so manifestly apparent are regarded too often with the most chilling indifference. This want of sympathy in the mass of mankind to the dangers of the deep, may to some extent, have arisen from the dissimilarity to that of any and all other sciences, in its effect upon the mind of man. The mass of mankind are not content to allow those engaged in the construction and management of ships to know which is the best shape, or what are the most appropriate proportions to accomplish the object designed; hence we say that every man has the imagery of what he regards as the best shape for a ship delineated on the pupil of his eye, and the moment his eye falls on a vessel he is ready to pass sentence of condemnation if the ship and picture and his eye do not agree; and in this manner public opinion is manufactured, so that every man has either an opinion of his own or that imbibed of another, upon what constitutes the well-formed ship. We find this pride of opinion in almost every man we meet, and in every association; and those whose business it is to furnish protection and security to life and property are imbued with the same malady. No other art is encumbered with this incubus to so great an extent, and yet none should be more entirely free from its influence. Few can see its deteriorations in the construction, but all may witness its baleful consequences in the management of the vessel in time of danger. In common with this multitudinous mass of opinions delivered, we cannot forbear giving our own views, which may be yielded as a right or regarded as a privilege, we are not particular which. With regard to the attainment of perfection in ship-building, which many discover in the ships of the present time, we would say that we regard the dangers of the *seas* as far less hazardous and to be dreaded than the dangers of the *ships*. The community assume, by common consent, that the ship having the largest amount of timber and fastening in her construction is the strongest, without reference to her shape. A monstrosity of the largest calibre in mechanical science, a greater error in the mechanical world could not well be proclaimed. The world assumes that because a ship is built in a certain locality, or at a particular place, she must be all right, or that because she will secure an insurance of the highest grade that she must be what she is insured to be—a most egregious error. The world absurdly measure the safety of human life in ocean travel by the number of *boats* on board of the vessel, and are more anxious to secure an act of Congress to compel the use of a certain kind of boat than they are to secure the use of the best constructed *ship*. They are content to allow the ship, with all her treasure, to founder at sea, so they can but save the boats and passengers. They legislate for the boat, unmindful that the *same appliances would save the ship*. If a life-boat is an improvement, would not

a life-ship be a greater one? We propel the ship by steam, but seem to forget that the same power is equally efficient in working the ship and protecting her against disaster by fire, flood, or collision. We seem to forget that every vessel lost by shipwreck is the annihilation of wealth to the amount of her value, and too often attended with the loss of human life, the value of which numbers fail to express.

The ocean is the world's highway, upon which all may travel; hence there should be a community of interest in adding to the means of safety of those who travel upon it, and all information in reference to smoothing its rugged pavement should be hailed with pleasure as a universal blessing, and the MAURY who shall map out its acclivities will ever be regarded as the world's benefactor. But what shall we say of the ship, which has been regarded as the model of perfected art? Alas! the philanthropist may weep and wonder at the long list of disasters which mar the page of its history. He may pause in amazement at the selfish design that would, under the garb of philanthropy, seek an appropriation from the government to forward an interest in the protection of property at the expense of human life. We jeopardise nothing in announcing that which we believe in the light of science is a self-evident truth, viz: that *ocean travel may and should be the safest on the globe;* and in order that an achievement so well worthy the latter half of the nineteenth century may be accomplished, we shall announce a catalogue of requirements as the precursor to the induction of a glorious era of safety to human life. Let Congress appoint a committee of practical men to frame a wholesome code of laws for the admeasurement of vessels, such as could be rendered available as an international tonnage law, and the time for the meeting of the committee to be during the recess of Congress; and let the law of 1852, for the safety of travelers on steam vessels, be referred for revision to the same committee; next let the ship-owner refrain from a truckling policy, which calls for *cheap* ships, assuming that the cheapest ship is the best, instead of being taught by experience, which shows the *best* to be the cheapest. Let the Board of Underwriters appoint mechanics instead of superanuated shipmasters as surveyors, and in train, let a Marine Architectural Institute be established by an act of Congress, or become a State institution. The necessity of such an organization will hardly fail to be understood when it is known that first-class mechanics in nautics [illegible] are much more rarely obtained than seamen of similar st[illegible] there is an abundant supply of those who are ready [illegible] tion and receive the pay, there is not more than one [illegible] der the service which belongs to the character. The [illegible] of Marine Architecture will be rendered still more a[illegible] membered that the developments of neither scienti[illegible]

knowledge are within the reach of patent laws, and as a consequence, the exclusive benefit of progressivg science is not the property of him who makes the discovery.

Any improvement in the model of vessels is common to all. Can it then, be a matter of surprise, that the model of ships is not rapidly improved? Whatever discoveries may have been made by the practical man will not be known until an opportunity is afforded him of developing, the same; and if that opportunity is never afforded him during his lifetime, the improvement dies with him. Then again we have the ship-owner (whose mechanical perceptions are generally obtuse) to oppose improvement in models, and if he suspects that the vessel upon which an improvement is proposed would carry one bale of cotton less by its introduction, he will oppose the improvement and tell the builder that he must have the carrying capacity, even though the vessel did not sail as fast or perform as well; and if the builder dare take the responsibility of departing so far from the last model, (unless dimensions absolutely demand it) as to render it perceptible, it would be difficult to satisfy the owner that every long voyage was not consequent upon the change of form; and unless some great genius in nautical mechanism shall arise, whose private fortune shall enable him to make improvements at his own expense, the progress of improvements must indeed be slow, unless a school of marine architecture shall be established. And although the ship-builders of the United States have much to complain of, as barriers to improvements, they have not less in Europe, as we have shown. Let us not boast of perfected art in ship-building so long as unspeakable *dread* attends the ocean traveler, or while sea-sickness destroys the appetite of the passengers, and makes them selfish and unsocial, and renders life itself to them almost a burden. Away, then, with the idea of having attained perfection in ship-building, nor let the induction of steam in ocean navigation lead us to suppose that we have accomplished all that can be done; that having crossed the ocean within ten days, we have reached the altitude or highest grade of progress. Let us remember that our sailing-ships have attained greater speed than our steamers, and that the law of progress will furnish increasing speed and consequent safety, inasmuch as they are inseparable. By the law of depreciation and disaster, we find that the American line of trans-Atlantic steamers have very materially diminished their speed during the past year, while the speed of the English line has been improved. Our marine insurance companies, by losses consequent upon want of efficiency and laxity of morals, have become virtually bankrupt, and the burden of marine disasters is too intolerable to be longer borne. But shall we continue on in this state of indifference? shall we continue to fold our arms at the *lullaby of perfection*, when the shrieks of shipwrecked sufferers come

to us from a thousand shores, and death from collision, fire and flood, are sounding daily in our ears?

Our ships should be *life-boats* on the largest scale, and we *may* realize, within the next five years, that for passenger-travel a single week is sufficient to insure the greatest comfort in connection with the greatest safety in crossing the Atlantic, and that sea-sickness is a disease for which the scientific shipbuilder has the only antidote.

THE GREAT SNOW-STORM OF 1857.

OBSERVATORY, WASHINGTON, Jan. 23, 1857.

WE are seldom visited by a more severe snow-storm than that which commenced here last Saturday night, the 17th inst., about midnight. It is now noon of the 23d, and such have been the effects of the storm that we have received no mail from New-York in the interval.

I wish very much to study the rise and progress of this storm as it marched over the country; and that I may procure the materials therefor permit me to invoke your aid, and that of the corps editorial generally of the country, in assisting me to present this appeal for information to all who may possess it.

I do not confine this request exclusively to those who are provided with instruments, and who keep meteorological journals; but I make it to those also who have no meteorological instruments. Instrumental observations are to be preferred; but when none of them are to be had then those that are made with the eye alone, will be very acceptable. For convenience I submit a *pro forma* set of questions to be answered for each day from the 14th to the 22d instant, inclusive:—

(Name of place,) January 14, 1857.

1. What was the appearance of the sky? 2. The force and direction of the wind? 3. When did it change; freshen, or go down? 4. When did it commence to snow or rain? 5. When did it stop? 6. How much fell?

Let those who keep meteorological registers give, in addition to the above, extracts from their journals for each day, stating the readings of their instruments.

Persons at sea, anywhere within 500 miles of the Atlantic coast or in the Gulf of Mexico, and persons in all parts of the country, from the Atlantic to the Pacific, and from Cuba to Canada and the British possessions, are requested to answer to this call. From the citizens of the United States I hope to receive in answer at least one report from every county in every State and Territory.

Respectfully, &c., M. F. MAURY.

THE BARQUE DE SOTO.

Among the many vessels of this popular rig, built for the navigation of our great lakes, which may be entitled to notice in the *Nautical Magazine*, the A 1 Barque *De Soto* is a worthy example. She was built at Cleveland, in 1856, by Peck & Masters, for R. K. Winslow, Esq., and has been commanded by Capt. A. Davis.

The frame is white oak, moulded out of five inch flitch, 14 inches at the keel, and seven at the plank-sheer—spaced 20 inches apart. She has three main keelsons, placed side by side, bolted together, and down through a five inch garboard, and the bolts riveted on the point. She has one strake of bilge keelsons, 10 by 12 inches, and four that are 6 by 10 inches, extending fore and aft. These keelsons are fastened with four bolts in each frame, two driven from outside, and two from inside, of $\frac{7}{8}$ and $\frac{3}{4}$ inch iron. The balance of her ceiling, up to the clamps, is five inches thick, and from eight to eleven inches wide, scarphed, and the scarphs bolted edgewise. The ceiling is fastened with two ten inch spikes, and two $\frac{6}{8}$ inch bolts to each frame, driven from the inside. She has two strakes of clamps five inches in thickness, each twenty inches wide, scarphed, and edge bolted. The outside plank, below main wale, $3\frac{1}{2}$ inches in thickness, above wale, four inches; deck-plank three inches, bulwarks two inches, and forward of the gangway two and a half inches, and calked. Hanging-knees are fitted to the alternate beams, and are bolted with $\frac{7}{8}$ inch iron, at distances of six inches apart. The centre-board box is built of oak, seven inches in thickness, bolted securely with one inch iron, not more than one foot apart. The box is thirty feet long, the centre board twenty-eight feet, and six inches in thickness.

The vessel has a first class finish, and her outfits comport with the qualities of her model, as well as the superior mechanism of her hull.

The masts are stationed as follows:—Foremast from outside of knightheads 40 feet, foremast to mainmast 50 feet, mainmast to mizzen, 45 feet, mizzen to taffrail — feet.

LIST OF SPARS.

Bowsprit, outboard from outside of knight-heads, 16 feet; jibboom, from bowsprit cap, 20 feet, flying jibboom, 12 feet, in one stick. Length of foremast 70 feet, diameter 30 inches; topmast 48 feet, diameter 17 inches; topgallant-mast and royal 48 feet, diameter 12 inches; mast-head 13 feet, topmast head 8 feet long, foreyard 75 feet, topsail yard 60 feet, top-gallant 46 feet, royal 28 feet; mainmast 96 feet in length, 28 inches diameter; main topmast 60 feet, diameter 14 inches; mast head 12 feet; main boom 44 feet, diameter 18 inches at slings; main gaff 28 feet; mizzenmast 85 feet long, 22 inches diameter; topmast 50 feet, boom 42 feet, gaff 28 feet.

The De Soto sails fast. With full cargo on board, and close hauled by the wind, she has sailed 12 miles an hour, contending against a heavy head sea. She carries 25,000 bushels of corn on 10 feet draught of water.

NEW PISTON PACKING.

Mr. David Joy read before the Institution of Mechanical Engineers, England, a description of a piston packing designed by him, and appearing to be an improvement. It is, at least, extremely simple.

The inventor proposes to secure steam tightness with the least loss of power from friction, and the greatest economy in repairs, namely, by the use of metal in that form in which it will give out the greatest amount of continuous elasticity, that is, by employing a spring acting through a lengthened space, with comparatively slight intensity of pressure, instead of the short and rigid spring or series of springs commonly used in packing metallic pistons.

The piston in which this packing is used consists of a simple block into which the rod is screwed and pinned. The periphery of the piston being turned to one-sixteenth of an inch less in diameter than the cylinder, a recess or groove is cut in it, not round, but spirally, with a half inch pitch, making three inches more than two revolutions; hence there is no follower.

The packing is formed out of a cast-iron or brass ring, five-eighths of an inch thick, and three-fourths of an inch larger in diameter than the cylinder. The ring is turned and bored, and being placed on a mandrel, a spiral groove is cut in it with a one-eighth inch tool set five-eighths of an inch pitch. This cut being carried through, leaves the ring in the form of a spiral coil of half an inch by five-eighths of an inch section, and of about five full revolutions. A portion of this spiral is cut off, equal to two revolutions, and three-quarters of an inch over. This is threaded on to the block-piston, and pushed down till it drops into the recess in the piston, which exactly fills laterally.

As the coil fits throughout the length between the parallel sides of the recess in the piston, its two extremities may recede from each other to any distance that may be found requisite for wearing out the rings without at any time exposing an opening for the passage of steam. The packing under all circumstances fills the recess, except at the bottom, where the vacant spaces at the extremities of the ring, left in the uncoiling of the ring by wear, are effectually closed by the piston body sliding in contact with the cylinder, that part of the packing ring being placed at the bottom side of the piston for this purpose. By experiments it has been found that with the sixteen inch brass packing, with half inch elasticity of compression on the diameter, and half inch square section of packing, the pressure on fifty-three square inches of surface of packing was 1.92 lbs. per square inch, or 102 lbs. on the whole packing. It took sixty-five lbs. to move this piston backwards and forwards in the cylinder, when disconnected from the rest of the machinery and the glands unpacked, equal to 0.32, or about one-third of a pound per square inch on the surface of the piston, the sixteen inch cast-

iron packing with five-eighths of an inch elasticity of compression on the diameter, and half an inch by five-eighths of an inch of section of packing, gave a pressure of forty-one lbs. per square inch of surface of packing, and took 135 lbs. to move it in the cylinder as above, being 0.67, or two-thirds of a lb. per square inch on the piston. This experiment was made immediately after the engine had done her day's work, when the cylinder heads were taken off, and the glands unpacked for the purpose. Previously to unpacking the glands, the steam at 110 lbs. pressure was put on behind the pistons with a most satisfactory result, there being no appreciable leakage of steam past the piston. A similar trial has frequently been made by merely opening the cylinder cocks, and putting steam on behind the piston when no appreciable blow was observable.

A corresponding experiment was also tried with a sixteen inch piston of theordinary class, having cast-iron V packings, and it was found to require 426 lbs. to draw the piston slowly along the cylinder, when disconnected as in the other experiment, showing more than three times the resistance.

The new packing avoids the frequent necessity for "looking at" the piston, which is so large an item in the expenditure of locomotive running sheds, and this is, in a great measure, a consequence of the accomplishment of the former object, as the large amount of elasticity resident in the coil will wear out the packing without the necessity of examination for renewing that elasticity by means of resetting the springs, as in ordinary pistons.

This piston has also the advantages of simplicity of construction, and freedom from parts liable to get loose, and produce breakage of pistons and cylinders. As this packing is used in a block piston, it does away with the necessity for lids, nuts, screws, guards, &c., and reduces the piston to its fewest possible number of parts—the rod, the piston, and the split-pin to secure the rod to the piston. The packing-ring also being always confined in a recess of a cross section exactly equal to its own, if broken can produce no injurious effect, as it must always remain in its place as if whole.

The time required for removing the packing is short.. The cylinder head is removed, the piston key knocked out, and the piston removed from the cylinder. The old packing may be threaded off and the new one threaded on in ten minutes. From long examination of the elasticity of the coils, they are expected to last at least 15,000 miles without examination. One has already run 10,000 miles without blowing. The new packing is also cheap, and allows of a very light piston.

COASTING IN JAPAN

VOYAGE OF THE VINCENNES' LAUNCH FROM SIMODA TO HAKODADI.

(*Continued from page* 347.)

At length the meal ended, and the sea having subsided sufficiently to permit an observation of the sun's altitude, we pulled away on our course. We thought at first that we should reach the bay of Sendai in the evening; but at noon the wind began to fall away, and yet we had scarcely reached the point from which, on the day before, we commenced our headlong race. The clouds disappeared and the sun shone brilliantly, its rays oppressive, hardly a breath of air. Whiling away the time, the arms were overhauled and examined, and were found in good condition; their waterproof covers and cases had protected them during the gale. A few small fish were seen in our wake, distinctly visible in the clear water. Two humped-back whales sported on the surface of the calm sea. A current swept us from the land, which, high and mountainous, spread along the lee beam, at the distance of four or five miles. There was not a sail to be seen, far or near.

On the morning of the 6th, we found that we had made but little progress during the night Light and baffling airs prevailed. A light breeze from the south sprang up, and our hopes rose with it. A fisherman was seen ahead, and we proposed to speak him, but he seemed so frightened as we luffed to, for that purpose, that we took pity, and pulled away again without interrrupting him in his peaceful avocation.

At ten, a pleasant, fair breeze, all sail set, and the launch moving cheerily at the rate of five knots an hour. The land south of Cape Kona Saki sweeps inward. A number of bluffs are scattered along the shore, and project sufficiently to entitle them to the appellation of points. They are separated by sand beaches. They do not, however, afford shelter. The cape is double-headed. Three villages lie to the southward of it; the third has apparently an artificial breakwater. Several small junks were at anchor there. At half-past one we passed the pitch of the cape, and keeping our fine breeze, ran in towards the land. The pitch of the cape ends in a bluff about 200 feet high, and is a spur from a mountain range several thousand feet in height. Several fishing-boats were running in for the point. Eight or nine miles to the south, the shore rises in banks to the height of a hundred feet. The evening sun dazzled our eyes, and rendered it necessary to approach quite close to the land, in order to see it distinctly. As we ran along these banks, we saw two remarkable objects resembling light-houses. On close examination they proved to be columns of

sand-stone, separated from the main by denudation, and crowned with trees which, clustering in cone-like form, represented the lantern. A flock of ducks winged their flight in long line before us. The land was wooded and verdant, becoming lower and lower as we proceeded. The trees presented a peculiar appearance. They seemed inverted; for the branches, standing out at right angles from the straight trunks, were larger at the top than at the bottom of the tree.

In some parts of the banks an upper stratum has disappeared, leaving a lower, equally level, and projecting several yards into the sea. The surf was too heavy to admit of our landing, which we wished to do. At the distance of a mile from the shore, we found the bottom of fine dark brown sand, in which glittered particles of mica. The temperature of the surface water at that point was 60°, and of the air 66°. The general aspect of the land was peculiar and pleasing; the mountains of a more rolling character than those of the south; the banks were perfectly level, dotted with trees, and covered with green sward, while the low meadow-lands had something of an oriental air about them.

We saw lying at anchor off the land in the open sea, a junk, not a vestige of life about her. She rode sullenly by her long grass cable stretched far ahead, reminding us of a deserted house in some wilderness. We steered for her, and swept close under her counter. Just then an idea occurred to Mr. Kern. No war-whoop ever rang through the air more piercingly, nor roused a startled sleeper more suddenly than his wild yell. The casement was hastily pushed aside, and the tonsured head of a Japanese was protruded. The expression of that countenance will never be effaced from the tablet of memory. It will come, with the open window of the junk as a frame. Had the sea given up its dead, or turned to a green field, such might have been the expression of that petrified face. We passed on. A minute more and the ape-like forms of the Japanese sailors were winding in and out and about the lattice-work of the high fantastic stem, until one culminating head over-topped a pyramid of forms; and as long as our eyes could reach them, or the glass reveal them, that black cone tipped the brown hull of the junk.

It is probable that they were enjoying a nap, and the American whoop woke them. This incident afforded amusement. The tars conned it over and over, laughing long and heartily. The general opinion seemed to be that we had furnished Mr. Japanese with a "Flying Dutchman."

About eight o'clock in the evening we lost our fair wind, and another sprung up from the north-east, ahead. This interruption threw our arrival at Sendaii still further into the future. To add to our discontent, a thick fog came on, and the air was as moist as that of the New England coast when the east winds blow. We passed a pleasant night, however, and in

the morning found the mist still spread about us. Approaching the land, we discovered a fishing-boat sculling swiftly by the shore. Guided by its course, we looked for some indication of a harbor, but in vain. The place towards which the Japanese directed their boat was marked by a semi-circle of breakers—a bar, probably formed by a narrow rivulet, flowing only in the rainy season. A number of junks were high and dry on the beach. The largest appears to have been stranded in a gale; the others may have been hauled up when the sea was smooth. The gloomy looking houses were visible among the trees of a cedar grove. We watched the proceedings of the fishermen, to see whether the channel would safely admit the launch. They crept close along the shore, and had barely room to clear the breakers. In fact, their boat was touched by the spray from them. Finally she was turned head to the shore, and her crew urged her far up; then, leaping into the water, hauled her beyond the reach of the waves. As our boat would not admit of such management, we tacked and stood off. The haze in the east was lightened by a white arch eight or nine degrees in altitude. The wind became very light, and the sea smooth. We got out the oars, for we were heartily tired of baffling airs. At length a light air from the north-east sprung up, barely filling the sails, but assisting the oars, relieving the toil of the crew. At intervals of a mile or two, the high banks of the coast are broken, and villages inhabited by farmers and fisherman are scattered along the shore. None of their boats were on the water, but all in sight upon the beach, beyond the limits of the waves. Just before noon we saw a junk at anchor, and passed near her. The haze lifted, and the sky was sufficiently clear to permit a meridian observation of the sun's altitude. The wind increased until we found the oars of no assistance, and they were laid in. In the evening we came near another junk at anchor, and as there was no prospect of effecting a landing for the purpose of replenishing our wood and water, we rounded to, alongside of her, to the infinite surprise of her crew, who seemed paralysed by the action; for they gazed at us without offering any facilities for getting on board, although we beckoned to them, and made signs to throw us a rope. Our coxswain, a nimble seaman, clambered up her huge side, and without preliminary remarks, threw us the end of one of their hawsers. By it we hauled to their entrance-port, and went on board. Once there they were as polite and corteous as could be desired. They gave us wood, and offered us soy and tobacco. They showed us their water-cask and told us to drink, but that they had not more than they wanted for their own use. We were invited into the cabin, compared compasses with them, showed them our chart, and asked more questions than it was possible to get answers to; for our means of communication were not of a very comprehensive character. The last drinking vessel of glass that we possessed was

presented to the captain. It was a goblet similar to the one presented to the officials of Isokona. The captain was delighted with it, and immediately found a secure place for it in his locker. The cabin reminded us more of a large barn than anything else, and there was a constant creaking of the timbers and planks, like that of an uneasy wicker basket. She was taking in a cargo of rice, ("kome,") which they brought from the shore in their flat-bottomed boats. Having concluded our business satisfactorily, with the exception of obtaining a supply of water, we bid them adieu, and with many expressions of regard on both sides, took leave. They would have had us stay longer, but we could not. During our visit the fog had again enveloped sea and land, and as the evening drew on we stood out to sea for an open berth. Scarcely had we made a good offing when the wind began to blow freshly from north-east. Not being sufficiently far from the shore to be safe in case of a gale, for it was a lee-shore, we took but one reef in the mainsail, though we wanted two, got in our light spars, and hauled by the wind on the starboard tack. Then the rain fell.

On the morning of the 8th we saw with much pleasure the high land north of the bay of Sendai; but, as if to add to our impatience, the wind had fallen away until it was calm. We waited patiently for a breeze. At ten it came, but ahead, and bringing with it the unwished for haze that annoyed us so much on the preceding day. We immediately stood in for the land, where we made long and short tacks, trying to discover some little harbor into which we could creep. The rain fell without cessation, and towards evening the weather had assumed a very threatening aspect. The rain fell in torrents, a thick fog hid everything from our view, and we were once more in a critical situation.

Running close in to the shore, even nearer than prudence dictated, we were enabled to see a single hut. From a staff before it waved a red flag and pennant.

As the night came on the weather was very threatening. A luminous sea, contrasted with a black sky, and the roar of the breakers was in our ears. Being to some extent embarrased, we were forced to carry a double-reefed sail, though we housed the topmast and rigged in the jib-boom. Near midnight, to our great satisfaction, the wind hauled to the west, and easing the main-sheet, we dashed through the toppling sea right cheerfully. The tired crew, with the exception of the watch, slept unconscious of this favorable change. There was, however, a prospect of the wind getting round to south-west, and blowing a gale, which somewhat alloyed our pleasure. Knowing nothing of the bay of Sendai, we shaped a course to make its eastern cape. This night was relatively uncomfortable; for we were dinnerless, supperless, and wet through. At daylight the land, for which we had steered, appeared close on board, high and beautiful. The clouds

were dispersing, a planet burned with splendor in the blue morning sky, and the distant mountains were white with snow.

Entering and traversing this bay we measured approximate base lines by the log, ran long lines of soundings, and made such observations as were necessary to determine the relative positions of its points and the curves of its shores.

The morning was so fine, the air so invigorating, that we looked back upon our hardships of the preceding day and night without regret. The boat resembled a floating laundry. Clothes, drying, were streaming every where to the wind. A cheerful fire blazed up, the kettle boiled, and we were merry as possible. Our adventures were discussed, and a general feeling of contentment and satisfaction was visible in every countenance, but in none more so than in that of Brown, the quarter-master. When he awoke, rubbed his eyes, and proceeded to remove and trim the binnacle-lamp, his countenance wore a singular expression of satisfaction. It seems that the sense of insecurity with which he retired had stirred his imagina. tion to fancy that some great creature of the deep—a gigantic polyp or star-fish—had embraced the boat in its multitudinous arms, and that on the eve of foundering it was only by the most strenuous exertions that we defended ourselves from the attack of the terrible monster.

We saw rising above the slope of a hill the masts of several junks, and we steered for them. Our stock of wood and water required replenishing, and we wanted such supplies as could be procured from the junks, even if there should be no town there. There was in sight one house, situated on the slope of a verdant hill, smooth as a well-kept lawn. As we approached the junks, we experienced a powerful current setting out to sea. The wind failing, we manned the oars, and after a hard struggle reached a bar, over which the water of a river rushed with great rapidity. We then perceived that the junks, to the number of fourteen, were moored in a river, and that, concealed from our view before, there was a large town. On the right, we observed a substantial modern light-house, fifty feet in height, quadrangular, narrowing to the top, and pierced for three windows, one above the other, on each side. The eaves of the roof projected over, and a cupola alone served as a lantern. As the surf broke upon the bar, we diverged to the left, where it broke least, and sounding, as we proceeded, entered the breakers. Our attention was drawn to a Japanese seated in a canoe, anchored in the channel, within the line of breakers, shaded from the sun by a broad hat. He held aloft a banner of white cloth, covered with Japanese characters. We supposed that t[illegible] placard was of a prohibitory character, and therefore paid no attent[illegible] further than to pass in silence, at an oar's length.

We were now fairly in the entrance of the river, and we[illegible] d

delighted with the scene that opened to our view. Imagine spread before you a placid stream an hundred yards in width, on its right bank a precipitious hill, bearing on its summit a temple, embowered in trees with wide spreading branches, and winding up among the rocks a path, dotted with figures of flowing robe and reverent air. At the foot of the hill a sacred temple, with spacious paved court terminating on the river in a broad quay of hewn stone. Then the city, which, though presenting no object remarkable for architectural merit, still captivated the eye by its novel appearance, and the air of simplicity which pervaded it. On the left bank, meadow-lands, covered with waving grass, and bounded by rising grounds beyond.

Moored side and side, were the junks, some of them probably of four hundred tons, perhaps more.

As the Japanese are less jealous of intrusion in their temples than in any other buildings, and as it is their custom to assign them as temporary residences for foreign visitors; we directed our course towards the quay alluded to; but owing to the shoalness of the water, our boat grounded before reaching the landing-place.

Careful to impress the Japanese with an idea of our discipline, the men rose from their thwarts, pointed their oars simultaneously, and, at the word, launched the boat astern into deep water. Meanwhile the inhabitants began to assemble, thousands of people came down and lined the shore for an hundred yards, eight or ten ranks deep; the bank rising from the water permitted those in the rear to see over the heads of those in front, and to us they presented a sloping wall of several thousand staring faces. We rowed slowly along the line, at the distance of ten or twelve yards. There was not a sound to be heard except the low hum of the astonished people, and the splash of the oars as they fell with measured stroke in the water; silence reigned upon the river. It was calm, the rays of the sun poured down and flooded everything with light. The order was given to hold water, the boat was stopped, and for several moments we remained motionless, while the Japanese gazed, as if each individual was wrapped in the contemplation of the strangers, who thus unheralded entered their quiet river. We called to them, they made no reply, still the same mute gaze, at length a piece of white paper was held up to indicate that we wished to communicate with the authorities, then several persons were seen to detach themselves from the throng and disappear in the town; the hum of conversation rose.

In a few minutes the officials were seen hurriedly approaching, clothed in robes of office, attended by standard-bearers, and a large retinue of subordinate officers. All displayed on their vestments insignia and armorial devices, one white circle surrounded by seven others, on a blue field,

was the most conspicuous, some bore wands of office, wore girdles of red silken cords with heavy tassels, and all were armed with two swords.

They immediately caused several boats to be launched into the stream and came alongside, a Mexican blanket gaily colored, spread upon the thwarts and garnished with arms, served as a divan, and pointing to it we invited the two first who came, to enter the boat and seat themselves, which they did, though the one who appeared to be the highest in rank, trembled excessively; his hands shook, so that he could scarcely hold the paper we handed him. It was stated that we were in want of provisions, wood and water; he immediately intimated that all should be furnished. We had then leisure to examine their personal appearance, the first who came was of small stature but possessed an intelligent and pleasing countenance, his dress was scrupulously neat, and from the difficulty with which he clambered over the side of the boat we inferred him to be a gentleman accustomed to an easy life. His companion was a jovial looking soul and quite portly, yet active and with a merry twinkling eye, evidently a man of humor. We offered our guests some American sake—Monongahela whiskey—and the latter tasting with the deliberation of a connoiseur, gradually imbibed a tolerable dram, which seemed, as the English have it, to warm the cockles of his heart, for he was forthwith merry and at home.

We then presented the letter of explanation.

Like the authorities of Sino Hama, they often paused in reading it, and expressed their satisfaction; they desired us to permit them to take it on shore, but we refused, whereupon the scribes with reed pens and India ink, made copies of it. During this transaction, the peeple on shore launched all the boats of the town, and crowding into them, men, women and children, they thronged round us, several of their boats overburdened, filled, and were going down, when those in them, who could swim immediately jumped overboard.

The river was now a scene of terrible confusion, boats running into each other, filling with water, women and children screaming, men plunging into the water, and as many as could place their hands on the gunwale of the launch ranged on either side. The junks were covered with people who swarmed like bees, and of those who could not swim, many waded out as far as they dared; among others, a man perfectly blind, who with his eyes shut, stood in the water facing the boat for more than an hour. Those on shore were calling and gesticulating to those in the boats, and as soon as one party had looked into the launch, another took its place: the town seem to have delivered itself up to a perfect passion of curiosity, the police used their batons freely, and substantial raps on the heads and backs of the noisiest mingled with the general up-

roar. None but those of highest rank were permitted to enter the launch, to them we exhibited everything that could be of interest, arms, instruments of various kinds, and books; they were pleased with a copy of Cuvier's "Animal Kingdom," pointing out the figures of those animals with which they were familiar. The lion, the tiger, and giraffe, called forth exclamations of admiration, but the hippopotamus, they thought really wonderful, and in looking at his figure and powerful tushes, they uttered a succession of deep groans, which made our men smile.

There were in the volume some fine engravings illustratmg the various branches of the human race; a fine head of a Japanese, by Siebold, they at once recognised it as typical, and from the conversation that ensued among them, and the comparisons they were evidently making, there is no doubt but that they had a growing idea of the breadth of the subject. They were struck at the head of North American Indian, in his war paint, examined it very attentively, and being asked to what country he belonged, repeated the question with reference to every portrait in the series. And we were surprised to find that the names of many countries were familiar to them. We then turned to the monkeys, with which they were no less pleased, in fact they are a very humorous people, and laugh at everything comical. Mr. Kem happening to crow like a cock for their amusement, they were continually plucking his sleeve and nodding their heads for a repetition, every crow was followed by a roar of laughter, until Kern tired, swore that he would crow no more, much to their chagrin. It was a long time however before they ceased asking, and every now and then one would look up in the most persuasive manner, with a lingering hope of a last crow. We were disposed to keep them in a good humor as nothing tends more to remove distrustful feeling.

As there was some delay in bringing water from the shore, we drew a glass of salt water from a cask, that had been filled at sea for ballast, and handed it to the principal of our visitors, he looked at us with an enquiring air, we nodded our heads and he put it to his lips, one mouthful satisfied him, he instantly pointed to the river water, intimating that it was fresh, and dispatched a messenger to hurry those who had been sent to the spring, so many remarkable things had occurred to him that day, that he exhibited no surprise, and probably imagined it to be the freshest water in those seas. The officials who had first visited us, then went on shore but soon returned, accompanied by several venerable dignitaries, who infected by the general desire to see the strangers, had been waiting for a favorable report. We received them as we had received the others and drank with them.

The numerous banners, wands of office, and armorial bearings presenting themselves on every side, and the officials in flowing robes, threw an

oriental air of barbarian splendor over the scene. In the midst of the confusion, a boarding-pistol was discharged. For a moment, there was perfect silence, then rose a great uproar. Turning our heads, we saw two Japanese in the hands of the police. They were instantly thrown down, their hands bound tightly behind their backs, and the veins of their foreheads seemed ready to burst. Tears streamed from their eyes. This spectacle so riveted our attention that for a moment we forgot to inquire the cause. It appears that several of them were looking at the pistol in the hands of the coxswain, and that an inquisitive fellow had desired to see it cocked. While in that condition he suddenly pulled the trigger, and it went off, fortunately muzzle up, for the bullet could not not have found its way out of that throng in any other direction without marking its course. We had thought such an accident possible before entering the river, for capped fire-arms are always liable to be fired accidentally in a boat, as they are constantly subjected to thumps and blows. In order to guard against it, patches of buckskin had been placed over the nipples, and the men were directed to wait until further orders before capping their pieces. As each was armed with a Roman sword there would have been ample time to prepare. The seaman to whom it belonged averred that he had not capped it, and with a caution to him the matter, so far as we were concerned, ended. It had the good effect, however, of impressing them with the fact that if uncapped arms are liable to explode, those which are capped are much more so.

The misery of the two culprits, for not only the principal, but the one next to him at the time of the accident were bound, excited our sympathies, and we asked the officials to interpose; but the stern policemen, jealous of their privileges, perhaps desirous of making a little display, shook their heads ominously, and were inexorable. We then requested them to make known our wishes to the authorities on shore, which they promised to do, and we observed that they were pleased with the intercession.

Our visitors were not only curious to see everything in the boat, but they tasted of all our condiments. It was amusing to see the eagerness with which they extended their hands to receive a lump of white sugar. They were as much delighted with peppermint and sugar as are little boys, and various were the sage remarks that followed the tasting of the mustard, the pepper, the vinegar and sugar. It is probable that their organs of taste did not recover their usual sensibility for several days after this indiscriminate application of stimulants. As we had not sufficient provisions to last to Hakodadi, we had abstained from showing them any of our substantial stores, supposing they might not believe we were really in want.

Several of them, who had gone on shore, returned with tubs of boiled

rice, prepared with a skill peculiar to the Japanese cooks. The rice is itself excellent, probably unsurpassed. They brought also hot tea, just from the fire. They then told us that they could not, without the authority of the prince of the district, furnish more than food for the day; yet they covertly slipped packages of eggs into our hands, with an air of great secresy. These they had concealed in the pockets of their robes. They then waited to see what would be done with the provision. To carry out the idea of *want*, it was suggested that the rice, though unsubstantial, should be eaten—that is, *eaten up*. The seamen, hungry enough, set about their repast with singular earnestness. Rice followed rice until the bottom of the tub was bare, not a grain remaining. Meanwhile, the Japanese were not idle in drawing conclusions. They ran for more, the feast terminated satisfactorily, and they were rewarded by that complacent expression of physical satisfaction, which usually follows a good meal, patting their stomachs, they smiled and nodded their heads in an appreciative way. As though they would have said, Yes, there is nothing like rice. You are all comfortable now, are you not so? The tea was supplied until all had been refreshed. Some of the tea of Japan is very fine; we preferred it to that of China, though heretofore, travelers have considered it inferior.

The day was nearly spent, and we looked about for a quiet anchorage to pass the night. The fatigues of the preceding day and night with the morning's work, forgotten in the interest and excitement of the moment, began to oppress us. We made known our intention of mooring, to the officers, and told them that we should remain all night in the river. They were desirous that we should determine to await the arrival of instructions from the Prince of the district; by signs they indicated that provisions of every kind would be supplied, that our boat would be heaped to overflowing, that the great men would come from the interior to look with their own eyes. The signs expressing this last, were simple enough, they held up their thumbs, they touched their eyes and pointed to the boat. Then inclining their heads upon the palms of their hands and holding up three fingers, they assigned three days and three nights, as the time required for the realization of these desirable event. We could not promise, and without further parley got up the anchor and pulled down abreast the temple, to which we had intended going on our arrival. The ebb tide was running at the rate of three knots, and the surf broke so heavily on the bar that even had it been desirable, we could not have crossed with safety that night. Several boats followed us, and one, a guard boat, anchored near.

The sun went down, and the air became quite cool, the river was as smooth as a mill-pond, and we we were happy in the prospect of a good night's rest. After dark, several boats, containing men, women, and chil-

dren, came alongside. They were paddling about, enjoying the evening on the water, and came to us incidentally. They conducted themselves with propriety, passed their lighted pipes into the boat for us to smoke, and were agreeable visitors. Indeed, we had observed long before that the people of these islands are extremely fond of congregating in the evening to converse, smoke, and enjoy the repose of nature. At Loo Choo many pleasant evenings, when the sky was cloudy, were spent on a grassy bank near the observatory, surrounded by those happy people, amusing each other with stories and jests. There was always ringing in the air a pleasant laugh, caused by some jest, for they delight in teasing, and are very humorous.

At length they went away, and the occupants of the guard-boat, finding that we disliked their presence, removed to a considerable distance. We had just housed the tarpaulin, and arranged the sleeping-places, when the watch reported several boats coming towards us from the town. Looking in that direction, we saw eight or nine large and gaily colored lanterns moving over the water, and the silence of the night was broken by the voices of the boatmen, singing to the sweep of the oar. As they approached, we perceived, illumined by the lanterns, the figures of the officials. In a moment they came alongside, and the next thing we saw were huge buckets of rice, and pots of tea. A half-suppressed laugh greeted this additional feast, and our friends, imagining that we laughed from pure joy, were delighted. Rather than disappoint them, the crew determined to eat what they could, they thought it a point of honor not to refuse what their own course had invited the Japanese to offer, they were committed, and resolved to do their best. At first, protesting to each other, they began, and by a happy system of exchanges and a commendable degree of consideration on the part of those whose appetites had not entirely failed, they disposed of all but one bucket-full, which, by sleight of hand, was snugly stowed away for the morrow. When the Japanese had seen us comfortably packed away, as the careful mother tucks in the bed-clothes of her children, they bid us good night, and took their departure. The guard-boat followed, leaving us alone on the river. Certainly we enjoyed that night's repose, a profound sleep, a grateful sleep; and in the morning every one was as fresh as a lark.. But we were not up earlier than the Japanese; for the first thing that followed the dawn was their re-appearance with a fresh supply of rice and tea. The principal one of our visitors—the one who seemed to have our subsistence most at heart—the seaman christened Captain *Rice*—old Captain Rice. There was the same sly transfer of eggs, the same persuasive inducements to remain until the great r[illegible]d arrive. The imagination was bewildered in contemplating the [illegible]sented by their pantomime. The great men, the pomp of stat[illegible]rflow-

ing abundance of supplies that would accompany that event, were presented to us with more effect than was in the power of language.

It was a subject of discussion with us, as to the degree of dependence to be placed in all these seductive representations, and we viewed the matter in every possible light. It may be, we thought, that they seek to delay our departure, intending to detain us finally by force. Even if they are actuated only by motives of curiosity and hospitable feeling, how will it be with the great man when he comes?

Had it been left to our choice, we would have remained, but the ship was waiting for us at Hakodadi. So we announced to our friends that we were going to sea without delay. Lifting the anchor, we got out the oar and pulled for the bar. As soon as they saw that we were going, they made haste to reach the shore, and a standard-bearer stationing himself on the point, signalled, with his flag, the course to be pursued. At first we obeyed his directions, but finding the surf breaking heavily around us, we determined to rely upon our judgment without regard to those on shore. In fact a slight suspicion of their honesty found place, and we steered for smoother water, as we did in coming in. By the lead, we had less at one time than a fathom. Easing the oars on the approach of a roller, we met it head on, and were gradually swept clear by the strong ebb tide. We had however to regret the loss of one of our oars, swept away by the breakers.

There were so many officials, soldiers and police, at this place that we thought it imprudent to land, or to divide our force. But it was necessary that the crew, who had been confined to the boat for such a length of time, exposed to sun and rain, should have an opportunity of amusing themselves, and of exercising their limbs on shore. We wished to find some retired spot where we could land, and be free from the intrusion of the inhabitants.

Such a place was afforded by an islet, which we at first supposed to be a part of the main, so close did it lie to the shore.

(*To be Continued.*)

THE CLIPPER-SHIP KATHAY, Capt. Stoddard, recently arrived in ninety-two days from Shanghae, China. She made precisely the same time in a passage last year. No shorter passage has ever been made from that port, except one, the Rainbow, in 90 days. The Kathay brings the first sample of new crop tea.

THE RULERS OF THE WORLD FOR 1857.

Country.	*Name of Ruler.*	*Title*	*Date of Accession.*
Anhalt Bernberg	Alexander Charles	Duke	1834
Anhalt Dessau Coet'n	Leopold Frederick	Grand Duke	1847
Argentine Confederation	I. J. Urquiza	Governor	—
Austria	Francis Joseph II.	Emperor	1848
Baden	Louis	Grand Duke	1852
Bavaria	Maximillian II	King	1848
Belgium	Leopold I	King	1831
Bolivia	General Cordova	President	1855
Brazil	Don Pedro II	Emperor	1831
Brunswick (Duchy)	Louis William	Duke	1831
Buenos Ayres	Phillippe Llavallol	President, pt.	1855
Cabool	Dost Mahomed	Ameer	—
Chile	Manuel Montt	President	1856
China	Hein Fung	Emperor	—
Costa Rica	Juan Raphael Mora	President	—
Denmark	Frederick VII	King	1848
Dominica	Buenaventura Baez	President	1856
Ecuador	Francisco Roblez	President	1856
Egypt	Said Pasha	Viceroy	1854
France	Napoleon III	Emperor	1852
Great Britain	Victoria I	Queen	1837
Greece	Otho I	King	1833
Guatemala	Rafael Carrera	President	1851
Hanover	George V	King	1851
Hayti	Faustin I	Emperor	1852
Hesse Cassel	William I	Elector	1847
Hesse Darmstadt	Frederick William I	Elector	1847
Hesse Homburg	Ferdinand Henry	Landegrave	1848
Holland	William III	King	1849
Honduras	Santos Guardiola	President	1856
Liberia	Stephen A. Benson	President	1856
Lichtenstein	Alois Joseph	Prince	1836
Madagascar	Banavalona	Queen	—
Mecklenberg Strelitz	C. George Frederick	Grand Duke	1846
Mecklenberg Schwerin	Frederick Francis	Grand Duke	1842
Mexico	Ignac Comonfort	President	1855
Mocena	Francis Frederick	Duke	1846
New Granada	Maria Ospina	President	1856
Nicaragua	William Walker	President	1856
Oldenberg	Nicholas T. Peter	Grand Duke	1853
Paraguay	Carlos Antonio Lopez	President	—
Parma	Robert I	Duke	1854
Persia	Nessen-ad-Din	Shah	—

Peru	General Castilla	President	1855
Portugal	Don Pedro V	King	1853
Prussia	Frederick William IV	King	1840
Reuss, Elder Line	Henry XX	Prince	1836
Reuss, Younger Line	Henry LXVII	Prince	1854
Russia	Alexander II	Czar	1855
Sandwich Islands	Kamehameha IV	King	1855
San Salvador	Rafael Campo	President	1856
Sardinia	Victor Emanuel II	King	1849
Saxe Coburg Goths	Ernest II	Duke	1844
Saxe Altenberg	Ernest Frederick	Duke	1853
Saxe Weimar Elsen	Charles Alexander	Grand Duke	1853
Siam	Phra Hard Klau	First King	—
"	Phrs Pin K au	Second King	—
Society Islands	Pomare I	Queen	—
Spain	Isabella II	Queen	1833
States of the Church	Pius IX	Pope	1846
Sweden and Norway	Oscar I	King	1844
Swiss Republic	Jules Murtin	Pres. Council	1856
Turkey	Abdul-Mejid	Sultan	
Tuscany	Leopold II	Grand Duke	1824
Two Sicilies	Ferdinand II	King	1830
United States	James Buchanan	President	1857
Uruguay	Gabriel A. Pereira	President	1856
Venezuela	JoseTadeo Monagas	President	1855
Waldeck	George Victor	Prince	—
Wurtemburg	William I	King	—

THE SHIPPING BUSINESS AT CHICAGO, ILL., for the season, has been immense. The receipts of grain at that port alone, have been 24,000,000 bushels, forming of itself an immense business for the railroads terminating at that point.

The shipments of grain have been	19,757,988
Last season	15,665,882
Increase, bushels,	4,092,106

The shipments of lumber show an enormous figure:

Being, feet,	456,003,556
Last season,	299,492,429
Increase,	156,531,127

THE STADE DUES.

EVERY captain who has sailed a ship to Hamburg, must recollect a dingy brick building on the right bank going up the river, on the grassplot in front of which are planted two rusty little cannon; and also the boat which pulled off from the adjoining landing with a couple of Custom House officers. The Stade Dues which are there exacted by Hanover from every vessel passing up the Elbe, originated in a permission granted by the Emperor Conrad II. to the Archbishop of Hamburg in 1038, to institute a market at the town of Stade, and lay a tax on merchandise exposed there for sale, the proceeds to be appropriated for the benefit of his diocese. Singularly enough, the imposition now affects most seriously the city it was meant to serve. After passing through the hands of Sweden and Denmark, Stade was bought by the Elector of Hanover, afterwards George I. of England. The right to the tax instituted seven hundred years before, was transferred with the town, and continues to be exacted in the modified form of a transit-duty on all vessels sailing up the Elbe. Following the precedent set by our course on the Sound Dues, we have initiated a movement against the levying of this black-mail. Our Consul at Hamburg, Mr. Ames, has been instructed to ask for a return of the light-houses and sea-signals maintained on the Elbe, their annual cost, and the amount of the dues levied to cover this cost; and also to learn the amount of toll paid into the Hanoverian Stade Dues office during the last ten years, and whether the Senate of Hamburg would give armed protection to American captains refusing to pay the tax, as a preliminary step to positive repudiation of the Dues altogether.

The Congress of Vienna declared the great rivers of Germany free, and the continuance of these Dues is as much against the spirit of their declaration, as it is against reason that American navigation should be annoyed by the decrees of an imperial barbarian who reigned four centuries and a half before the New World was discoverd. The Congress of deputies of States through whose domains the Elbe flows, which met at Dresden and passed the Elbe-navigation acts on June 23d, 1821, did nothing positive for their abolition. Between 1842 and 1844, other deputies from the same States met again at Dresden, and took the subject into consideration, but the Dues still remain. Our commerce with Hamburg received an impetus from the Russian war, and is steadily increasing; and within the last year, a line of screw steamers has commenced regular trips between that port and New-York. Hanover possesses no equitable clai for reimbursement, in event of the abolition of these Dues. Unlike mark, which has built lighthouses and placed buoys on the sound,

never troubled herself to improve the navigation of the river. Hamburg alone has lighted and marked it, and cleared its channel. Denmark also is interested in this matter, for Altona, which adjoins Hamburg, has become an important port, and is her chief city next to Copenhagen. *Boston Atlas.*

SHIP-OWNING.

Ships are the engines of commerce—merchants are engineers of trade—wealth is the result of profitable commerce, and ship-owners may either rear or raze the superstructure of a State. It is not in number or magnitude, in speed or burthen, that a nation's shipping forms its right arm of enterprise, power, and renown. These results are consequent rather upon profitable voyaging. To make ships *pay* is the grand problem for the owner, and on its solution depends the position of a commercial people in the scale of nations. To the people of the United States the paying properties of shipping becomes a subject of general interest, for in the event of unprofitable results to maritime enterprise, our grand commercial race with the rest of the world for the supremacy in trade will sooner or later be lost. Business cannot long be done for the mere meed of renown.

We may well inquire, in what consists the elements of success in shipping? The mazes of speculation need not be entered to obtain an answer to our question; common observation is quite competent to indicate it.

These elements have been found to lie in *model*, *construction*, *sparring*, *machinery*, *outfits*, *command*, *manning*, *navigating*, and *management*. Intelligence and energy should preside over every task and manœuvre, whether made by owner, builder, engineer, master, crew, or consignee.

The first consideration in purchasing or building a ship is one about magnitude—how large a vessel will be best adapted to the trade in view? The right determination of this point is important, for the intended voyage may be too long for a small vessel, or too short for a large one; or freights may be too numerous or too scanty; or the rates rule too low; and may be inexpedient for either extreme.

A very common error of the shipowner is to be influenced by crude notions of economy, or vain promptings of ambition, in fixing the tonnage of his intended ship; if by the former, he restricts the dimensions, which are astutely figured out so as to secure heaping measure from Government Tonnage Surveyors; if by the latter, he aspires to own the largest ship in the trade. The ratio of depth to breadth furnishes an index of the light shed upon the acquisitive nature of an owner, in inverse proportion, while

breadth indicates liberality, and length may be said to show activity. Energy is represented in the amount of propelling power, while the truth and honor of an owner is, or should be, inferred from the strength and security of his ships. With owners rest the responsibility for ship's characters. As owners are, so are builders, so are ships, so are masters and underwriters. We have seen more than one self-deluded man strike out for fortune by first endeavoring to evade the revenue laws, next by cheating the ship-builder, then by defrauding the insurance, and lastly wind up in ruin from the sharper practice of one or the other of his compatriots in the same boat. Cheap ships are the veriest humbugs of the age. They are built for men who aim to get something for nothing—who would purchase a ship for any price below her value, or get her insured for any amount above. Owners of this stamp have vastly multiplied of late years, and they are driving from the field of competition the honorable and just.

The first step to a healthy system of ship-owning would be the enactment of a judicious tonnage law, which would recognise the entire capacity of vessels. Let the discerning owner determine the magnitude of his shipping solely with reference to *utility*.

The mode of propulsion should be kept in view in deciding upon burthen, and it will also materially influence the model. These two combined must be dependent chiefly upon the speed and regularity of the intended communication, whether transporting goods, passengers or mails; and these again depend upon the frequency desirable. The more trade and intercourse there is between two ports, the more frequent and speedy must be the transit. Again, valuable goods, passengers, and mails, must have quickest dispatch, and it will not answer the requirements of business to *mix* passengers and intelligence with goods in the same cargo, as is now done in ocean steamer transportation. Order is the first law of all sublunary successes. Speed advances prices, and they demanded speed. It is therefore a waste of capacity to appropriate it to the transportation of coarse goods by the ton, for steamships designed for the transit of mails and businesss passengers. Intelligence is both time and money. Of what importance is the hasty arrival of a cotton bale or a cheese, in comparison with the reception of news and advices? and hence, why carry all these with passengers in the same vessel? Our government has ever paid handsomely for mail service by steamers. Passengers and packages also pay well, and would do far better for increased celerity of tra ... he philosophy of money-making by ocean-steamers seems n ... ome apparent to our great steamship owners; some of ... ve been stupendous, but unprofitable.

Upon the model and propelling-power, the dis... will depend. On these subjects it is best alw...

and engineer. It is strange that so many merchants and mariners fancy they can learn practically all about the models and machinery of ships, so as to become the heroes of their own enterprises on the ocean. Not a merchant but employs a student of Blackstone to assist in his business, yet nearly all seem to know so much of ship-building as to hold in light esteem the qualifications of professional architects. Take care that the model is a good one, no matter by whom designed, and that the propelling power is the best for all the results desired. When improvements are offered for introduction by inventors, make a fair investigation of their merits, and do not rely upon the counter-arguments and statements of the heads of "Works," and concerns who may be interested to bar the adoption of inventions superior to their own methods. We dare say that there are more humbugs in use than are offering for adoption.

The ship and machinery should be faithfully constructed from good materials. The distribution of laps, butts, and scarphs in the hull, is of more importance than the kind of wood, for strength, while the fastenings must be relied upon to unite the fabric—upon them the unity, strength, and durability depend. *Economy* is sometimes carried to a dangerous degree in the fastenings of vessels. We have reason to believe that a very reprehensible practice has in some instances obtained in ship-building. We allude to slighting the work of the hull, and subsequently contriving to call upon marine underwriters to finish the job of strengthening it, by internal strapping or otherwise. The want of some standard by which to rate the hulls of vessels properly, causes an enormous waste of "insurance" upon faulty ships.

All parties are to blame, but perhaps it is the underwriter, more than any other, who is competent to set a mark upon cheap ships, and dishonest workmanship, by instituting and being guided by a correct survey of shipping in taking risks.

In ship-building it is singular that opposite principles prevail in computing the cost of the work. For instance, the hull is built by a fictitious standard of *tonnage*—a term having reference to *capacity*, while the boilers and machinery are built by the *pound*, the spars are made by the *inch*, and the sails are furnished by the *yard*. The result is that hulls are generally scanted of materials, especially at midships; boilers are built of such pattern as to weigh most; machinery is not well-proportioned; and most vessels are over-sparred and carry too much canvas. The fact is that one directing mind should control all the elements of design, and if possible, supervise their execution. There would then be a responsible party for every new ship.

The outfits should be chosen to correspond with the requirements of magnitude, model, build, propelling power, and the trade for which a ves-

sel is designed. Many vessels are not "well found," which may be the cause of their loss. Others abound in outfits which are furnished without judgment, but few owners spend too much in this department.

The command is one of the most important elements of profit connected with a ship. It is either sink or swim for the owner when the captain takes charge of the vessel; hence the propriety of the general practice of co-proprietorship in the vesesl between owners and masters. One of the greatest evils attending navigation and commerce is the lack of capacity in shipmasters. It is quite true that most of them do not lack in all things, but some among them are incapable of making money for the owner, and this is the grand test of success. Captains! make money for your owners, save money for your underwriters, lay up your own earnings, and you may always sail a dry ship, a ship well-found, and one having a good reputation among shippers and passengers.

Vessels should always be well-manned. The navigation of the seas successfully depends greatly upon the sailors. Mere rope-haulers are not to be compared with sailors who discharge their duty, and on one of whom the safety of ship and cargo may depend. We cannot refrain from alluding to one cause of the degradation of sailors which is seldom named in print, but which exists in quarters from whence we should expect better things. We allude to the practice of ill-using seamen on board of ship, in order to induce them to desert, and leave their wages behind, or in order to ship a new crew at more favorable rates. The perquisites from such practices have formed the nucleus of fortunes of various kinds. It is akin to such artifices as are resorted to for getting from the underwriters a new sail for a torn one, and buying back the latter to use again.

All vessels of considerable size should carry steam-power for working ship. It would elevate the character of seamen, and lessen the number required. Too many ships sail short-handed.

The navigating of vessels is at once the most arduous and responsible of all the duties of command. A dull master makes a dull ship. Intelligence, energy and prudence, are the qualities for earning money. Mere energy may defeat its own purposes. Conceitedness is the rock on which many masters split. Such are always deficient in "small stores" of business information, and always prefer the theatre to the lecture-room, and a novel to the last volume on nautical subjects. In choosing a master for a ship, sound the channels of his inner harbor—seek for substance rather than shadow. Look out for the outfits al as the gilded ground-tackling dangling from his fob.

To the owner is reserved the m -the financiering ashore. It must be well execu t and discretion must be joined to energy. Or ists in dispatch

when in port. Engagements should be made, so far as possible, in advance of arrivals, and the best facilities be provided for discharge and shipment. The modern system of management leaves little for the master's discretion, even in foreign ports. He moves his ship by orders. Less business capacity is now required in masters than formerly, when they were required to procure their own freights, and be responsible for the profits of the voyage.

New-York is perhaps the most limited in dock accommodations of any seaport in the United States. Vessels have to wait for a berth from one to two and three weeks before they can begin to discharge. This is not the worst: it is fortunate to get a berth in turn where berths are bought and sold. The enterprising owner is expected to buy his way, beginning at Staten Island, through all the movements and vicissitudes incidental to the stay of his ship in port. A reform is needed in many quarters, and in other cities as well as New-York.

In conclusion, we wish to advert to the subject of old shipping, and offer a remark upon its influence on rates of freight, insurance, &c., &c. Owners in present times seek to preserve a higher standard of appearances in their shipping than in years gone by, especially on packet routes; consequently, sale is made of all vessels beginning to suffer the marks of age, and their places are supplied with new ones. This multiplies vessels faster than they are wanted for the increase of commerce, for the old vessel is bought by a party who *can afford* to sail her cheaply and carry freights at lower prices. Thus she is transferred to the hands of a competitor who is bound to make money. We think it would be for the interest of ship-owners to condemn their worn-out vessels in the same manner they now do worn-out steamboats or old boilers. It will not pay to run new and expensive vessels in competition with old ones, representing one-fourth of the capital. It is a question of no mean importance what becomes of all worn-out shipping; it is nearly all *sold* in some market. The underwriters get a fair proportion—what becomes of the remainder? We believe that if unseaworthy shipping were broken up, instead of being patched up, a decided innovation would be introduced for the benefit of the

SHIP-OWNER.

A REVENUE CUTTER FOR TAMPICO.—The U. S. Revenue Cutter *Lewis Cass*, Lieut. Brushwood commanding, has been ordered to proceed to Tampico, to give protection to the American residents of that place. She left the Southwest Pass on the 3d of February.

THE MARITIME COMMERCE OF AUSTRIA.

The maritime commerce of Austria may be said to date from the incorporation into the Empire of Venice and its dependencies on the Adriatic shores, made over first by the peace of Campo Formio, and confirmed to Austria by the peace of Luneville. Napoleon, then, is the true founder of this branch of Austrian commerce. It is true that, on becoming aware of the advantages thus bestowed on Austria, he rescinded those cessions, first by the treaty of Presburg, and again by the peace of Vienna, in 1809. But Austria having been once put on the right track, used her opportunity to recover by the treaty of 1815 her ascendancy over the Adriatic. Trieste is the centre of this commerce, and the superiority of that place over all the other Austrian ports, even at an earlier period, may be seen by the following table:

	Ports—	*Fiume.* *Florins.*	*Trieste.* *Flor.*	*Venice.* *Flor.*	*Oth. Ports.* *Flor.*	*Total.* *Flor.*
1838	Imports	200,000	32,200,000	9,000,000	8,000,000	49,400,000
	Exports	1,700,000	14,400,000	5,300,000	2,000,000	23,400,000
1841	Imports	200,000	22,300,000	8,500,000	5,300,000	36,500,000
	Exports	1,600,000	11,200,000	3,100,000	1,900,000	17,800,000
1842	Imports	200,000	24,900,000	11,500,000	5,1,0000	41,000,000
	Exports	1,300,000	11,900,000	3,400,000	2,600,000	19,700,000

In 1839, the imports of Venice were to the imports of Trieste as 1 to 2.84, and their exports respectively as 1 to 3.8. In the same year the number of ships entering each harbor were in the proportion of 1 to 4. At present, the preponderance of Trieste has assumed such dimensions as to eclipse all the rest of the Austrian ports, Venice included. But if Trieste has supplanted Venice in the Adriatic the fact is to be accounted for neither by the special favor of the Austrian Government, nor by the unceasing exertions of the Austrian Lloyd. An obscure creek on an iron-bound coast, inhabited only by a few fishermen at the beginning of the eighteenth century Trieste had grown into a commercial port numbering 23,000 souls by the time the French forces evacuated Istria in 1814, with a trade amounting to three times that of Venice in 1815. In 1835, the year before the establishment of the Austrian Lloyd, its population was above 50,000, and at the time when the Lloyd cannot yet be supposed to have attained any considerable influence, Trieste occupied the second rank after England in the Turkish, and the first rank in the Egyptian trade, as will be seen from the following tables of imports and exports from Smyrna from 1835 to 1839:

	Piasters.	Piasters.
England	126,513,146	44,618,032
Trieste	93,500,456	52,477,738
United States	57,329,165	46,608,320

The following figures, giving the imports and exports of Egypt for 1837, are also instructive on this head:

	Francs.	Francs.
Trieste	13,358,000	14,532,000
Turkey	12,661,000	12,150,000
France	10,702,000	11,703,000
England and Malta	15,158,000	5,404,000

How, then, came it to pass that Trieste, and not Venice, became the cradle of a revived navigation in the Adriatic? Venice was a town of reminiscences; Trieste shared the privilege of the United States, of having no past at all. Formed by a motley crew of Italian, German, English, French, Greek, Armenian and Jewish merchant-adventurers, it was not fettered by traditions, like the City of the Lagunes. Thus, for instance, while the Venitian grain trade still clung during the 18th century to its old connections, Trieste at once attached itself to the rising fortunes of Odessa, and thus succeeded by the commencement of the nineteenth century, in driving its rival entirely from the Mediterranean corn trade. The fatal blow sustained by the old Italian trade-republics, at the end of the fifteenth century, in consequenee of the circumnavigation of Africa, was repeated on a small scale by the Continental customs decrees of Napoleon. The last remnants of Venitian commerce were then annihilated. Despairing of all chances of profitable investment in that expiring maritime commerce, Venitian capitalists naturally transferred their capital to the opposite shore of the Adriatic, where the land-trade of Trieste promised to double its activity at that very epoch. Thus Venice itself nursed the greatness of Trieste—a fate common to all maritime despots. Thus Holland laid the foundation of the greatness of England; thus England built up the power of the United States.

Once incorporated with the Austrian Empire, Trieste commanded a natural position very different from what had ever been occupied by Venice. Trieste formed the natural outlet of the vast and inexhaustible dominions lying at its back, while Venice never had been anything but an isolated, outlying port of the Adriatic, usurping the carrying-trade of the world, and resting that usurpation on the barbarism of a world unconscious of its resources. The prosperity of Trieste, therefore, has no limits but the development of the productive forces and means of communication of the enormous complex of countries now under Austrian rule. Another ad-

vantage of Trieste is its contiguity with the eastern shore of the Adriatic, furnishing at once the basis of a coast trade almost unknown to the Venetians, and the nursery of that hardy race of seamen whom Venice never succeeded in fully turning to account. As the decline of Venice kept pace with the rise of the Ottoman power, so the opportunities of Trieste grow with the ascendancy of Austria over Turkey. Éven in its best times, the trade of Venice was stunted by a division of Eastern commerce altogether dependent on political causes. On the one hand, there was the Dauubian road of trade, hardly ever connected with Venetian shipping; on the other hand, while Venice, under the protection of the Catholic kings, monopolized the commerce of Morea, Cyprus, Egypt, Asia Minor, etc., the Genoese, under the pretection of the Greek Emperors, almost monopolized the trade of Constantinople and the Black Sea. Trieste for the first time has united these two great channels of the Levant together with the Danubian trade. At the end of the fifteenth century, Venice found itself, so to say, geographically displaced. The privileges of its neighborhood to Constantinople and Alexandria, then the centres of Asiatic trade, were forfeited by the circumnavigation of the Cape of Good Hope, transferring the centre of that trade first to Lisbon, then to Holland, and afterward to England. The privilege lost to Venice is likely to be recovered in our own times by Trieste, by the cutting of the Isthmus of Suez Canal. The Trieste Chamber of Commerce has not only associated itself with the French Company for the Suez Canal, but also sent agents to explore the Red Sea and coasts of the Indian Ocean, in fartherance of the commercial operations contemplated in those parts. The Isthmus once cut, Trieste will necessarily supply all Eastern Europe with Indian goods; it will be as near to the Tropic of Cancer as it is to Gibraltar, and a navigation of 5600 miles will bring its ships to the Sunda Straits. Having thus placed the outlines and prospects of Trieste commerce, we will now add a tabular statement of the commercial movement of that port during the period of the last ten years :—

	Ships.	*Tonnage.*
1846	16,782	985,514
1847	17,321	1,007,331
1848	17,812	926,815
1849	20,553	1,269,258
1850	21,124	1,323,796
1851	24,101	1,408,802
1852	27,931	1,556,652
1853	29,317	1,675,886
1854	26,556	1,730,911
1855	21,081	1,489,197

On comparing the average of the first three years of this period with the

avarage of the last three years (973,220 against 1,631.664), the increase within so short a space is found to be in the proportion of 68 to 100. Marseilles is far from exhibiting the same rapidity of progress. The basis of the prosperity of Trieste, besides, is all the more solid, as it is owing to the increased intercourse both with purely Austrian and foreign ports. The national trade, for instance, from 1846 to 1848 amounted to 416,709 tons average per annum; from 1853 to 1855 it had increased to 854,753 tons average per year, or more than double. During the years 1850 and 1855, inclusive, the Austrian tonnage entered in and out at Trieste was 6,206,316: foreign, 2,981,928 tons. The trade with Greece, Egypt, the Levant and Black Sea, had risen from 257,741 tons to 496,394 tons average per year during the same period.

With all this the actual commerce and navigation of Trieste are still far from having attained that point where traffic becomes a matter of regular routine, and the mechanical effect of fully developed resources. Let one only cast a glance at the economical situation of the Austrian States, the imperfect development of internal communications, at the great part of their populations still clad in sheep-skins, and strangers to all civilized wants. In the same measure in which Austria shall put its communications on a level say only with the German States, the commerce of Trieste will make rapid and powerful strides into the heart of the Empire. The completion of the railway from Trieste to Vienna, with a branch from Cilly to Pesth, will create a revolution in Austrian commerce from which no one will derive greater advantage than Trieste. This railway is sure to begin with a traffic greater than that of Marseilles, but the dimensions it may attain one can only realize by bearing in mind that the countries whose only outlet is the Adriatic possess a population of 30,966,000 inhabitants, equal to that of France in 1821, and that the port of Trieste will drain a territory of 60,398,000 *hectares*, that is, by seven millions of *hectares* larger than France. Trieste therefore is destined to become, in its immediate future, what Marseilles, Bordeaux, Nantes and Havre united are to France.—*Bayard Taylor in the New-York Tribune.*

UNDERWRITERS' CONVENTION.—The Convention of Lake Underwriters, which met on the 10th of February, 1857, adjourned on the 13th. The tariff of rates adopted by the New-York board was adopted, with slight modifications. The rates of insurance on cargoes were advanced a quarter per cent, but no change was made in the rates on hulls.

TONNAGE AND HORSE POWER.

IT is one of the most surprising truths presented to the mind of every man who possesses intelligibility on the subjects of nautical commerce and engineering, that in those departments of industry *there is neither a law of science nor a rule of art* in the United States for determining the capacity of a vessel, nor yet the amount of power used in propelling it through the element it navigates. We build vessels, buy and sell them, without knowing much more about them than the amount of money they cost. There is not a vessel built in the United States where builder, owner, master, or engineer, can furnish the exponent of *stability, capacity, and strength*, or the amount of power used to propel her onward in her course; and yet, with this mass of ignorance, based on conceit, staring us in the face, our merchants, masters, ship-builders, and engineers are humming the tune of perfection. The world has learned but just enough of the science of navgation to discover that hereditary knowledge will never perfect it. In ship-building, and all that pertains to maritime pursuits, it is assumed that the investigations of science are adverse to money-making, whereas the reverse is most emphatically true, as underwriters are learning by dear experience. We can determine the unit or the value of a bushel or a gallon in bulk, either by weight or capacity; but we cannot measure a ton in two vessels with the same results in both. The determination of the value of a dollar has been fixed by law, and whether in gold, silver, or copper coin, its value remains the same; but when we come to determine the capacity or bulk of a ton of navigable vessel, we are at sea, with neither *log, lead, or compass* We can determine the power of gravity, but we cannot, by present rules, tell the power of steam. We can tell the power of water by defined laws, but we cannot furnish the unit of power of water, when vaporised. We tell of the number of *horses power* of an engine, but who can tell what it means, or what is its value as a unit of power? What, we ask the engineers of Europe and America, has time to do with the power of steam? and pause for a reply. We say that time is not an element of power, in connection with steam. It is the instantaneous thrust which determines the power, less the friction of journals, &c. And yet, engineers, on both sides of the Atlantic, talk of the perfection of the steam engine, with no standard for the determination of its powers. Ship-owners are obliged to send their ships to England if they would know their size; and yet the Chamber of Commerce can discover a thousand little things which, when compared with this *humiliating fact*, is of little consequence. How long shall merchants, ship-builders, engineers, and legislators, fold their hands, while so much remains to be done?

Of all the bills now before Congress, there is not one which is of equal importance with that of the revision of the tonnage-laws. But we can readily account for the indifference upon this subject in Congress, when we remember that it does not come within the category of special legislation. The revision of the tonnage-laws is for the general good, and consequently must lie over until all local and individual questions are settled. It is of little consequence, though hundreds of lives, and millions of treasure, are lost every year, directly traceable to the tonnage-laws of the United States.

WINDS AND CURRENTS OF THE SEA.

U. S. N. Observatory and Hyd'l Office.
Washington, Jan. 13, 1857.

Sir,—The fine run of the American ship Mandarin, Captain John W. C. Perit, from New-York to Australia, suggests the propriety of calling your attention to some of the incidents connected with it.

The Mandarin is one of that very large volunteer fleet of merchantmen that are assisting us in our investigations into the winds and currents of the sea.

The vessels of this fleet are furnished with the requisite instruments by their owners or masters, who have generously undertaken to furnish the required observations at their own expense the blanks for which being supplied by this office. In round numbers not less than a thousand sail of American merchantmen are thus lending their co-operation and assistance. Under the English flag may be counted the whole navy of Great Britain with one hundred picked captains, the *elite* of her merchant service.

Under the Dutch flag, there are two hundred and twenty-five merchant vessels, besides those of the Royal navy, engaged also as fellow laborers in the same wide field.

The abstract logs of the English co-operators are returned to the Meteorological Department of the Board of Trade, London. The Dutch ships return theirs to the Meteorological institute of Utrecht. There they are put into able hands for discussion, and the results of each officer are published at the expense of the Crown; and as many copies of them as may be used, are generously sent here free of cost, for gratuitous distribution to American navigators.

It is greatly to be desired that the admirable system of meteorological co-operation and research should be extended landward. Many great in-

terests beside commerce and navigation, would be promoted by such extension. Agriculture and all the industrial pursuits of the people would be more or less benefitted by it.

Besides these co-operators at sea there are also Spaniards, and Portuguese, Italian, Belgians, and Prussians, Danes, Swedes, with merchant ships belonging to Bremen, and Hamburg, Norway, Russia, Chile, and others, all assisting in collecting materials and furnishing data for the same system of research which has resulted in the wind and current charts.

Since the publication of these was commenced many of the old pathways of ships across the sea have been straightened or shortened and some new ones opened.

It is a brief period; but "commerce is king," and two golden empires have risen up under its sway within that time.

Neither Melbourne nor San Francisco was then recognized as marts of trade. Now they are both commercial emporiums that dazzle the world with their splendors. Of all the seaports within the dominions of Great Britain, London and Liverpool alone, exceed Melbourne in the amount of her shipping, and you know what San Francisco is.

In consequence of the knowledge which these researches into the physics of the sea and air, have given us touching the winds and currents, these two flourishing marts have been lifted up; as it were, and set down nearer to the gates of Europe and America by many days sail.

When I commenced to discuss the winds and currents for the route to Australia the average passage from England thither was one hundred and twenty-seven days, and from the United States about ten days more. Vessels then pursued the route recommended by the British Admiralty, and which our investigations showed did not lie through the region where the winds would be found most favorable. After pointing out this fact and recommending another route to navigators, the following remarks were made in the sixth edition of the Sailing Directions, which was published by this office in 1854:—

> The opinion may be rash, or the expression of it may seem like a boast; but be it what it may, I here venture the prediction that the round voyage from the United States to Port Philip or Hobartown and home again, can be made, and will be made, under canvass, by the route here laid down, in 130 or 135 days, or less.
>
> Nay, I go further, for so great is the confidence I have in the propelling power of these westwardly trades of the extra tropical south, and venture the opinion that a voyage of circumnavigation can be accomplished by this route in less time than the passage has ever yet been made by clipper ships from New York or Boston to San Francisco.

The latter part of the prediction has been fulfilled. It has become a

matter of such common occurrence that its fulfilment no longer excites remark.

The abstract log of the Mandarin was received here yesterday. It is an admirably kept journal. She took the route alluded to above. Had she returned direct from Australia, she probably would have fulfilled the former part of the prediction also. She sailed direct from New-York for Melbourne, in December, 1855. She took the wind and current charts for her guide, abandoned the old routes entirely, and made the run to Port Philip in seventy days from New-York.

Thus, by having spread before her these charts, which embody the experience of many navigators, she was enabled to "pick her winds" and go very quickly. She averaged under canvass alone for that voyage, which was more than half way round the world, nearly or quite two hundred sea miles a day.

The islands discovered by Capt. Heard, of the American bark Oriental, in 1852, lie along this route. The Mandarin might have been wrecked upon them, for they are in the fair way to Australia, and their position has never been properly determined.

I have had the honor before of calling your attention to this group of islands and their probable value to the fishing business of the country. They are an American discovery, and it is much to be desired that one of the vessels which the law of March 3, 1849, directs to be employed in assisting me to perfect the discoveries made in the course of these investigations should be despatched on a visit to Heard's Islands.

Respectfully, &c.,

M. F. Maury.

Hon. J. C. Dobbin, Secretary of the Navy.

Tonnage of Chicago District.—Philip Conlev, Esq., Collector at this port, furnishes the following table of tonnage enrolled in the Chicago District at the close of the third quarter of the year 1856:

Total tonnage of Steamers	2,897,20
do do Propellers	2,826.18
do do Barques	2,195,23
do do Brigs	3,328,08
do do Schooners	11,802,85
do do Scows	352,90
Grand total of tonnage	61,052,22
Tonnage of those who have surrendered papers, and those who have changed owners, to be deducted	5,000,00
Balance of tonnage Sept. 30, 1856	56,043,22
do do 1855	48,376,09
Increase Sept. 30, 1856, over 1855	7,667,13

It is thought the returns at the close of the present quarter will show an increase in tonnage for the year of 8000 tons.—*Chicago Press.*

LLOYD'S COFFEE-HOUSE, LONDON.

MAX SCHLESINGER, in his very readable work, thus alludes to Lloyd's—a place famous throughout the commercial world:—

In the London Exchange Building itself there is a broad staircase, with crowds of busy people ascending and descending, and there is a door with large gold letters, "Lloyd's Coffee-House." Let us ascend that staircase, and see what sort of a coffee-house this is. We pass through a large hall, from which doors open to several rooms; at each door stands a porter in scarlet livery. In the hall itself are several marble statues and a large marble tablet, which the merchants of London erected to the Times, out of gratitude for the successful labors of that journal in unmasking a gigantic scheme of imposition and fraud, which threatened ruin to the whole trade of London. In the centre of the hall there is a large black-board, on which are written the names and destinations of all the ships carrying mails which will sail from English ports on that and the following day. In the corner to the right there is a door with the inscription, "Captain's Room." No one is allowed to enter this room but the commanders of merchant vessels, or those who have business to transact with them. Next to it is the "Commercial Room," the meeting place of all the foreign merchants who come to London. We prefer entering a saloon on the other side of the hall, the doors of which are continually opening and shutting; it is crowded with the underwriters, that is to say, the capitalists, who do business in the assurance of vessels and their freights. The telegraphic messages of vessels arrived, sailed, stranded, or lost, are first brought into this room. Whoever enters by this door, walks, in the first instance, to a large folio volume which lies on a desk of its own. It is Lloyd's Journal, containing short entries of the latest events in English ports and the seaports in every other part of the world. It tells the underwriters whether the vessels which they have insured have sailed, whether they have been spoken with, or have reached the port of their destination. Are they overdue?—run aground?—wrecked?—lost? In this room there are always millions at stake. So firmly established is the reputation of this institution, that there is hardly ever a bark sailing from the ports of the Baltic, or the French, Spanish, or Indian Seas, which is not insured at Lloyd's. Its branch establishments are in all the commercial ports of the world; but its head-office is in Cornhill, and in the rooms of the Exchange. Before we again descend the stairs, let us for one moment enter the reading-room. Perfect silence; tables, chairs, desks; readers here and there; men of all countries and of all nations; all around the walls, high desks with files of newspapers

whose shape and color indicate that they have not been printed in Europe; they are, indeed, papers from the other side of the ocean—China, Barbary, Brazilian, Australian, Cape, and Honolulu papers—a collection unrivaled in extent.

MARINE BOILERS.

MESSRS. EDITORS—IN your last issue appeared a high-pressure article over the grotesquely ill-chosen signature "L'Clair," on the much-abused subject of Vertical Tubular Steam Boilers, purporting to be an inquiry for information as to the advantages and disadvantages of this form of steam generator; but the real object of which is shrouded in a still more murky cloud than that which obscures the writer's vision on even other subjects than the one *alluded to.*

Your correspondent makes his ignorance of this whole class of Boilers a basis of an attack upon a particular Patent. Confessing his decided ignorance of the peculiarities of this Patent, he goes on to decry the ship in which they are to be placed, merely because they are to be placed there. Stating that he knows *some* out of twenty-six to have failed, he carefully avoids pointing out these unfortunate ones, and in his eagerness to behold the full blaze of noon before the dawn of day, he avoids with equal care an inquiry into the practical operation of the two or three "remains of an antiquated delusion" which some glimmering ray had enabled him to learn were still in existence. From the explosion of a few, he would infer want of safety in the whole; and from this valley of dry bones, he by a breath of his own mouth, brings forth the living anathema—*humbug.*

Now, Messrs. Editors, did your correspondent really desire the light he evidently so much needs, he is certainly entitled to the credit of striking out a new mode of procedure to obtain it. Astronomers, in collecting and concentrating what light Providence has favored them with, set an example which "L'Clair" might, in our opinion, have followed with profit; and certainly, had he examined the specifications of this patent, reasoned on the results that ought to follow experiments in accordance with them, and followed up his theory by a comparison with the practical working of those he had ascertained *to be* working, he would not have increased the more than Egyptian darkness whence we hear his wailing and gnashing of teeth.

Again, the first principles of rhetoric teach that coolness, candor, and accuracy of reasoning are indispenable requisites of a search for truth, especially by discussion. The general tenor of "L'Clair's" whole article shows that he has overlooked the first two of them; and for proof of his

forgetfulness of the last, we have only to glance at the particulars of which this whole is composed. For example, he states that *some* out of twenty-six have failed, and that some others have exploded; and in calling for a list of failures and explosions, he delicately leaves his readers to infer that it is only by chance that any succeed, and that all are unsafe—a pair of syllogisms incomplete, unsound, and intensely hypothetical in more senses than one. He violates a golden rule of debate, by implying that no satisfactory explanations can be given of failures, of which he does not particularize even one, and exhibits a very doubtful fairness in endeavoring to throw a slur on the invention, because for a time no efforts have been made to introduce it—not reflecting that there might be *reasons* for the sleep that but *resembled* death. And still less should his animadversions have extended to the ship in which these Boilers are about to be placed. Of this vessel, with the exception of the peculiarities of construction to which he alludes, he is told nothing, and knows less; and even if he had proved what he takes for granted, that the Boilers were worthless, he should, in the name of decency and common sense, have waived a condemnation of the ship until he had some grounds for a decision of any kind. As well might he rail at the beautiful model of the *Fulton*, because certain Boilers, infringing on the Montgomery Patent, have left her among the slowest of our steam-ships; an indiscretion of which, we opine, he will not soon be guilty.

But, Messrs. Editors, Mr. George A. Stone, the gentleman who is constructing this vessel, deliberately laid aside, to the disgust of his Consulting Engineers, a nearly finished set of Boilers, arranged on a plan which has been pronounced the best Marine Boiler, by men whose enlightenment might be represented by infinity as a base, and that of "L'Clair" as a constant multiplier, for the purpose of replacing them by those which are the butts of the merriment of this latter worthy. And as we think that his deliberations led him to a correct determination, we shall try to establish our position, and to show that those which he finally selected may not be so very bad "*specimens* of American *genius*" in the line of Boiler Engineering, even in this advanced age.

It appears to us that the requisites of a good steam generator are economy of fuel, economy of space, durability, or economy of repairs, ease of cleaning and repairing, of control and attendance.

Economy of fuel, in this connection, means abstractly the rendering available for the generation of steam, as much as possible of the heat produced by the combustion of that fuel; and in speaking of the comparative economy of different Boilers in this commodity, we would be understood to designate the relative proportions which they render available.

This economy depends upon various circumstances, of which the most

important are, the rate of combustion, the arrangement of the heating surfaces, their proportion to the quantity of fuel to be consumed, and the circulation of the water in contact with them. And first, as to the rate of combustion: the amount of heat evolved in the combustion of a given quantity of fuel being the same, whether it be burned quickly or slowly, the question arises—which is the preferable mode of consuming it? The quantity of air required being the same in both cases, it follows that the velocity must be greater in the first instance than in the last; or, in other words, the draught must be more active, which requires the escape of a larger proportion of the heat up the smoke-stack to maintain the draught, unless it be aided by artificial means; but this again demands the consumption of as much power as would be generated by the portion of heat saved. The capacity of the water in contact with the furnace-walls to carry away the heat concentrated in that quarter, limits the available intensity of the fire there. Below this limit, the heat *can* be made as available in the one case as in the other; but of the additional flue-surface required for the quick combustion we shall speak in its proper place.

The proportion of the heating-surface to the quantity of fuel to be consumed should evidently be such as to absorb all the heat generated by its combustion, except so much as is necessary to maintain the desired draught, be that slow or quick; but a much more important question is, how it shall be arranged.

We have now to choose between vertical and horizontal surfaces; for as those which are inclined approach either the one or the other, their value will be determined by that approximation.

Water being a poor conductor, and able only to distribute heat vertically by connection, those horizontal surfaces which are heated from above were long ago discarded; and as to those heated from below, we have no hesitation in pronouncing them far inferior to those which are vertical. For, though a square foot of horizontal heating-surface will produce *as much* steam as the same extent of vertical surface, provided that the attendant circumstances are the same in both cases, it will not produce *any more;* and we propose to show the advantages of the latter over the former, in enabling us to mould those circumstances according to our desire, so that they may aid rather than oppose us. And this brings us to the consideration of the point next in order—the circulation of the water.

The object of the heating-surface being to *form* steam, and not to heat it when formed, it is essential that the water be kept in constant contact with the surface, so far as this can be done; and that the greatest facilities be afforded the steam for rising from the surface on which it was generated.

Any one who has attentively observed the phenomena of ebullition, either in a glasss flask or in a metallic vessel, must have noticed that the

air, which is always mechanically suspended in the water, and also the vapor formed by the heat, collects in little bubbles on the sides and bottom of the vessel, and apparently adhere with considerable tenacity. This appearance is owing to the fact that when a particle of water assumes the form of steam, it also assumes a spherical form, because the surrounding water presses equally in all directions; and befere it can rise, it must have so much increased in size and elasticity as to break through the arch of water that shuts it in. This is equally true of vertical and horizontal surfaces; how, then, is the difficulty to be overcome?

The only remedy is at once simple and obvious—a circulation of the water must be established, having the same direction as the steam, in those parts where the steam is generated; and it is evidently far preferable that this cicrulation should be kept up without a resort to artificial means, and that the current of water should *sweep along* the heating-surfaces, and aid the ascent of the steam as it is formed; but this latter desideratum can be attained *only* by the employment of vertical heating surfaces; and the greater facilities afforded by them for distributing the heat, so as to establish a circulation, are self-evident.

As stated abeve, it is of the utmost importance that the water be kept in constant contact with the heating-surface; and the same disposition of that surface which attains the object above-named, adds to it, by its very attainment, the one under consideration; for the surface can only be isolated from the water by the formation, by excessive heat, of a sheet of steam over its entire extent; and even were there *no* circulation, this would meet with less resistance in moving edgeways than flatways: and how much more readily will it rise when the circulation has a tendency to sweep it along in its chosen direction!

But economy of space is in many cases, especially in Marine Boilers, of nearly as great importance as economy of fuel. It is obvious that to secure this desirable property, the arrangement must be such that the greatest extent of the most efficient surface shall be contained in the smallest possible compass. Having then chosen between horizontal and vertical surfaces, as to generating qualities, the question is how it shall be disposed; and certainly the tubular form is beyond debate the preferable one, as to compactness, and possesses, also, the important property of being far stronger, with less metal than any other form. This insures safety, and increases the sensitiveness of the surface—an advantage to be noticed again, under another head.

But whatever be the arrangement of the surface, the rate of combustion will materially influence its proportion to the quantity of fuel; for, as already remarked, the heated products of combustion must have a greater velocity with a quick than with a slow fire. But a given extent of sur-

face will only absorb a certain amount of heat in a given time; therefore, supposing the velocities to be the same, that extent of surface which would absorb all the available heat in the one case, would be insufficient in the other; and were the temperatures the same, those gases which, at the lower velocity, would have parted with all their available heat, will, at the higher velocity, have passed beyond the flues without so doing. Much more, then, must the flue-surface be increased when the higher velocity is a necessary concomitant of the higher temperature. From this, in connection with what was said under the former head, it will be seen that the greatest economy, both of fuel and of space, calls for the slowest combustion that will maintain the temperature due to the desired pressure of the steam.

It has been supposed, thus far, that the water used is perfectly pure; but as this is notoriously unlikely ever to occur, it behoves us to inquire what will result from the presence of impurities.

It matters not whether they be mechanically suspended, or completely dissolved, either by the water or any chemical substance mixed with it: as the steam is produced by the evaporation, not of solid matter, but of water, these foreign substances will be left in the boiler; and when the solution becomes too much concentrated in the one case, or the mixture becomes quiet in the other, they will inevitably attach themselves to, and crystallise upon, its sides, unless something prevents them. And under the same circumstances, it would matter not whether the surfaces were vertical or horizontal—they would be encrusted alike—the mass of scale being, of course, formed more quickly where the fire is hottest. How, then, are the former better than the latter in this respect?

In answer, we say that one of the advantages of the circulation which we have shown to be of so great value in aiding the ascent of the steam is that while sweeping away the clinging bubbles of vapor, it sweeps away also the solid matter that would be deposited by the formation of that vapor. And if the two opposing currents can be formed, made to meet, and, destroying each other's motion, to deposit, during their temporary quiet, the solid matter they hold suspended, upon a surface not exposed to the fire, it will be seen that the mass will be in a pulpy form, and not being indurated by the heat, may be readily blown out. This advantage, being the result of an active and determinate circulation, will appertain to those Boilers in which this can be maintained, provided also that the surfaces are so disposed as to be swept by the currents; and unless artificial means be resorted to, this, as already stated, takes place to a far greater extent in those whose surfaces are vertical than in any others.

If, then, less scale be formed in them than in others, they must evidently be more easily cleaned if what scale *does* form can be as readily re-

moved. And from what can the scale be more easily scraped than from the smooth interior of a tube? As to the cleaning of the flues, it is apparent that the introduction of a brush of wire between two rows of tubes, when the whole length of the tubes can be touched by it, is no difficult task; more especially when this arrangement gives the additional advantage that this operation may be performed without the loss of any more time than is required to perform it.

A moment's reflection will show the difference between brushing away *soot*, and scraping away *scale*, from between rows of tubes fixed firmly in the tube-sheets—or, in other words, will suffice to prove the advantage of *tubular* Boilers, properly so called, over those with *tubular* flues, especially in sea-going steamers.

So much for the case of cleaning; but are they as easily repaired? The *ease* of fitting a plug of metal in the end of a tube, which may, from any cause, give out, or of replacing it by a new one, is generally admitted. But in regard to the durability, or economy of repairs, it may not be amiss to reply to the reiterated assertion that "*the tubes will burn out,*" that they will not do so necessarily; and if it be further said that they *have* done so, it is only justice to the practice, as well as the theory, to say that it is not because they were *vertical tubes*, but because they were vertical tubes *egregiously misarranged.* This burning out is consequent upon the isolation of the metal from the water, alluded to previously. Now, in the case of a vertical tube, if the lower part of it be heated above a certain degree, so much steam will be formed there as to isolate the metal in the upper part; and if the heat there be very great, the metal will evidently be exposed to its worst effects; as, however active the circulation within, the vapor is too poor a conductor to convey the heat from the metal to the water. This view of the matter may make it appear not quite impossible, "in the present advanced state of engineering," to form the steam in the tubes at their upper ends, and thus evade this difficulty; and if this be done, there is no earthly reason why the tubes should not be *as* durable as any other arrangement of heating surface; but on the contrary, aside from the tendency of the results previously deduced, to render them more durable, they have the advantage of being thinner for the same strength, and thus better able to withstand the effects of sudden increase of temperature.

To insure ease of attendance and management in use, it is essential that the draught be not only good, but under perfect control. That neither depend upon the principles involved in the arrangement of the heating-surfaces is sufficiently obvious; and it will be made equally apparent that there are arrangements of tubular Boilers that allow the draught t least *as* easily and perfectly controlled as any others. It is also

that the exact level of the water be readily ascertained. This depends upon the freedom from foaming: but foaming is caused by the agitation of the water by the rising steam; therefore, from the premises that this agitation will be diminished by an upward circulation of the water which is in contact with the heating surfaces, and that this circulation can be more readily maintained when these surfaces are vertical, it follows that in boilers of this discription the water-line can be more easily ascertained than in others. The maintaining the water at a uniform height is manifestly a mere matter of figures: for as the formation of a given quantity of steam calls for the evaporation of a definite quantity of water, the rapidity with which the water line will fall can be easily calculated; and it is just as easy to carry any desired depth of water above the ends of a number of tubes as above a cylindrical flue, or any thing else. It will probably not detract from these advantages in ease of management, to add that the thinness of the tubes greatly diminishes the time required to "get up steam," as well as to "knock it down."

Having thus pointed out the advantages which *may be* attained by the use of vertical tubes, it remains to show how they *are* attained by the peculiar arrangement described in the specifications of the "Montgomery Patent." Previous to the invention of this Boiler, many attempts had been made to employ vertical tubes; but one vital defect was that the tubes formed the *only* connection between the water above and that below the tube-box. It was argued that a circulation would be maintained, *up* through those tubes which were nearest the furnace, and *down* through those which were remote. This would indeed be the case, were these latter tubes not heated above a certain degree; but when steam was formed freely, it was found, that that formed in these remote tubes, in its ascent to the surface so far impeded the circulation that all such Boilers are practically worthless. After numberless vain endeavors of others to make that succeed which, by the laws of nature, could *not* succeed, this difficulty was evaded in the simplest possible manner, by the inventor of the Boiler now under discussion, who was the first to see that the water would not go down through the tubes, and to suggest the propriety of letting it go down some other way. In this Boiler, then, an unimpeded circulation upwards through all the tubes is maintained, by surrounding the tube-box with a water-jacket; or in other words, by allowing the water above the tubes to descend through vertical water-ways at the sides of the tube-box.

Two other equally vexatious, and it would seem equally obvious troubles, arose to bar the success of those boilers above referred to. One was the unequal expansion of the tubes, as no provision had been made for equalizing the heat to which the different tubes were exposed. Another was isolation of the metal in the front tubes (or those nearest the furnace),

by the excessive heat to which their lower ends were subjected. But it will be rejoined that even after the circulation has been rendered possible by the addition of the surrounding water ways, the objections now under consideration will still apply. Not however, with equal force: the circulation diminishing one of these evils to a considerable extent, by aiding vastly the ascent of the sheet of steam which tends to isolate the metal in the front tubes. Still, that these difficulties are of no mean magnitude, is illustrated in a melancholy manner by the failure of the tubes of the Boilers in the Collins' line of steamers,—in which, what advantage might be gained by the use of a *part* of this invention, (the water-ways) is as far as possible neutralized by the use of two sets of furnaces, one above the other—thus equalising what by all means should be *unequal*, the heat on the upper and lower ends of the same tubes; and rendering unequal what ought to be *equalised*, the amount of heat received by each tube.

The nature of this difficulty is also illustrated in a ludicrous manner, in those Boilers which go far to constitute the cargo of our navy, in which, by an absurd use of one set of furnaces underneath the tubes, such a quantity of steam is sent up through the latter as to transform them effectually from *heating* to *heated* surfaces, tending to oxidation of the tubes, and asphyxiation of the unprejudiced observer. But to return: having rendered the circulation possible, this invention also makes it certain, by means of the distribution of heat now under consideration. This may be *partially* effected by using a bridge at the front of the tube-box, and a hanging bridge at the back. But it may as easily be completely attained by the beautiful and simple device of a "diaphragm," or partition-plate about the middle of the length of the tubes; so that while the highest heat to which any part of the tubes is exposed strikes the upper ends of the front rows, the lowest degree in like manner strikes the lower ends of the same tubes: thus not only forming the steam in the upper parts of the tubes, whence it can readily ascend to the surface, and at the same time aiding its rise by maintaining a rapid and equal circulation of the water, but also equalising the amount of heat received by the different tubes, and thus avoiding the evil effects of unequal expansion and contraction. This diaphragm, also, by causing the products of combustion to leave the tube-box at the same end at which they entered it, allows the other end to be closed by large doors: which b[illegible]
open, allow the flues to be readily swept, the whole lengt[illegible]
being accessible: and at the same time give far more per[illegible]
draught than can be attained by any damper. They al[illegible]
cold air to rush in among the tubes, give the power to
steam" almost instantly, when occasion requires.

By these two devices then, so complete in their sin[illegible]
ficulties surmounted which stood in the way of using

Boilers thus arranged, the water being heated to a comparatively low degree in the lower ends of the tubes, is flashed into steam at their upper ends, and by this distribution of the heat, a rapid circulation is established, which not only sweeps away the steam from the tubes, but assists it in rising to the surface without dashing the water into foam: and at the same time carries with it the solid matter which would otherwise be deposited on the surface of the tubes; then the water descending again through the water-ways at the sides of tube box, meets in two opposing currents under it, when in the same manner that a sand-bank will be formed at the junction of two rivers, so here the solid matter is dropped upon a surface placed for its reception, which, not being exposed to the fire, the pulpy mass does not become indurated. And while also the expansion of the tubes is equalised, these results are attained without sacrificing any of the advantages afforded by the tubular form.

We have thus, Messrs. Editors, endeavored to condense into a few pages what would properly be the contents of a volume. We have not only asserted, but, it appears to us, established by reasoning, the superiority of vertical tubular Boilers, over every other form of steam generator now known; and have shown that the Montgomery Patent—this "antiquated delusion"*—embraces the only possible combination by which they can be rendered successful in practice, as well as the most simple and elegant device for realizing, to their fullest extent, the advantages we have claimed.

But it may be sneeringly said that this is all *theory*—which is a term used by many as synonymous with *humbug*. In reply to this, it is sufficient to say that we have only endeavored to account for results which we know to be *facts*, by deducing them from first principles. In other words, having seen the Montgomery Boiler in practical operation, and knowing it to be possessed of those properties which we assume to be the requisites of a good steam generator, we have endeavored to show that these things are the inevitable results of postulates which are not disputed.

If then, it shall please our friend "L'Clair" to do now what it was properly his duty to have done before, that is, to prove that Vertical Tubular Boilers in general, or those of the Montgomery Patent in particular, are *as necessary consequences of their being such*, liable to the charges of a deficiency in economy either of fuel or space, of a lack of safety or of durability, or of difficulty of control, or attendance, we shall be most happy to receive that demonstration. And when he has succeeded in proving it, we shall with all candor acknowledge it: and shall then hold out to him the other horn of the dilemma, and request him to further show why it is, that if a want of any or all of these qualities be necessary results of their dis-

*Query—Does wine spoil by age?

tinguishing characteristics, they happen to excel in each and every one of them. And that they do so, we are prepared to prove to him not only by referring him to where they had been used, but as we ourselves were convinced of it, by ocular demonstration of their practical operations, where they not only are but have been for years in constant use and increasing favor.

JUSTICE.

THE SUBMARINE TELEGRAPH.

PROFESSOR HALL, of New-York, has elaborately discussed the feasibility of the proposed Ocean Telegraph, in a letter to the editors of the *Scientific American*, and strongly recommends the plan of floating stations, located and anchored securely at proper intervals, to receive the ends of sections of the cable, and thus, by shortening the circuits, make the action of the current strong and quick.

"This is," says the *Scientific American*, "unquestionably a plan that can be made to work *effectively*, if at all, and demands at least, from the grandeur of the idea, the attention of the scientific public. The only question is as to firmly securing the Floating Stations, which does not seem impossible when we reflect upon the enterprise and genius of the present age.

"The only question of doubt as to its practicability is the securing of the Floating Stations represented, to prevent them drifting during storms; if this can be done, the project is practicable.

"The telegraph cable, may be attached to floating buoys, or it may be laid on the bottom of the ocean.

"Professor Hall has alluded to the length of time required in signalizing through a long line of submarine cable, extending from New-York to Ireland, amounting to six seconds from the period one signal is transmitted until the wire is capable of being operated to send a second signal. From data in our possession, we make the period of time between two signals, seven seconds, and conclude that he is correct in his deductions, respecting the small amount of work which can be accomplished by such a long submarine circuit. His plan, therefore, of making a series of short circuits is founded on scientific principles, for quick and economical working.

"The reason why electric signals are so much retarded in wires encased in gutta percha, and laid under water, is owing to *lateral induction*. The insulated wire assumes the character of a vast Leyden jar, the copper wire representing the inner coating, and the water outside of the gutta percha, the outer coating. This *lateral induction* of the electric fluid in the cable, not only retards the current passing through it, but when one electric wave is sent through the wire, another wave or signal cannot be sent until the reflex, or return wave has escaped; and the time required for this is twice as long as for the direct wave."

But the Professor can speak for himself, hear him :—

As a practical experimenter in electricity I cannot agree with the general opinion as to the feasibility of the plan of a telegraph across the ocean, now in progress under the patronage of England and the United States, though I fully concur in the grandeur and magnitude of the enterprise.

"My reasons for predicting its failure are as follows:—

"1. There has never yet been transmitted a communication through a continuous wire the length of this cable—twenty-four hundred miles—so far as my information extends. But even had this experiment been successfully made on land, the managers of this enterprise are very much deceived if they assume a similar result with a submerged wire. It can be easily demonstrated that a coil of wire, ever so well insulated, if immersed in water, will not affect an electro-magnet with the same power as if tested out of water. The proximity of so antagonistic an element produces a sensible effect upon the electric current, and would, in the length of cable proposed, entirely absorb the subtile fluid, especially all that could be forced through so small a wire as the one contemplated. But even admitting a communication possible, it is known to Electricians that in submerged wires a perceptible period of time elapses in the passage of the current, and that this period increases with the length of cable, and that it requires some seconds of time before the wire is uncharged after each signal. In the length of cable proposed, according to recent experiments, it would require over six seconds for each signal, making less than half a column in the *New-York Herald* for 24 hours' work as its possible capacity—not one-twentieth the probable demand.

"2. In the next place, leaving out of the question these radical and insurmountable obstacles in the way of the present plan of a Telegraph, the improbability, to use no stronger term, of securing a perfect insulation with so thin a coating of gutta percha for so many hundred miles of wire, when the slightest particle of damp—even the prick of a pin—through its delicate covering, would destroy the whole work, is of itself an important item in making up the chances of success.

"3. Then the almost impossibility of laying down so long and delicate a cord without an accident, from ships surging, perhaps, against heavy seas, when the slightest strain would damage either the central wire or its covering, and I can see but little margin for a successful result.

"Now, supposing these objections well-founded, is there any plan to avoid these difficulties, and thereby achieve the greatest work that the enterprise and genius of man ever contemplated? I beg leave to submit to the public the outlines of a plan which I have submitted to the inspection of competent parties with a favorable report, the leading feature of which is to shorten the telegraphic circuit, by constructing Floating Telegraph Stations, to be located and permanently anchored at suitable distances apart, directly on the line of vessels travelling between New-York and Liverpool. These Stations would be constructed in a peculiar and substantial manner, with but a single story above the water, so as to meet any emergency of wind or weather, and to be secured to the bottom of the ocean by wire cables, such as suspension bridges are made of, radiating in every direction, attached to heavy anchors sunk in a circle around the Station.

It need not be here said hastily, as it doubtless wtll be, that it is impossible to locate permanently a Floating Station to receive the ends of telegraph cables, with suitable apparatus, material, and operators to transmit messages, &c. Whatever the apparent difficulty may seem at first, the thing is nevertheless entirely practical, and is only a question as to the strength of the vessel, the number of cables and the weight of anchors. If fifty cables and anchors of one tun weight will not secure it, let there be five-hundred cables and anchors of ten tuns each. What would that be to the accomplishment of so great a work? A Floating Station of this kind every five hundred miles, with suitable force and material, would make the electric circuits so short as to render them perfectly reliable, besides answering purposes of infinite importance to the shipping interests of the two great countries they connect. When located they would have their fixed places on ocean charts, and should any accident befall a ship in mid-ocean, it

would, of course, make for the nearest station, when aid could be instantly telegraphed and sent from the nearest port. Besides answering the purpose of light-houses and ocean marks to the commerce of the world, they could report the progress of vessels plying between the two ports, to the great interest and satisfaction of friends, whereas now, the fate of thousands of lives and millions of property is hid in weeks and months of anxious suspense.

The Telegraph cable connecting these stations should contain at least *four* separate conducting wires, not only to provide against the chance of a single wire becoming damaged, but to allow a number of operators to transmit messages at the same time, as the amount of business will no doubt require it. There will be no difficulty in making the cable of any required size to insure perfect insulation, as the short sections can be conveyed to their respective localities in separate vessels.

In addition to Floating Stations, I propose suspending the cable below the surface of the water, a sufficient depth to be out of the way of ships, icebergs, &c., say eighty or one hundred feet, by means of buoys or floats. The cable should be made of such a specific gravity as to barely sink, so that there would be no difficulty in floating it with buoys, say one mile apart. Directly under the buoy would be attached an anchor or weight to prevent the cable from swinging from its direct line. These buoys painted white and numbered would mark out a highway across the trackless deep, and would many times prove of great utility in determining the exact location of vessels, as well as prevent collisions, by each ship keeping its own side of the buoys. The most important object contemplated in the use of buoys, however, is the facility it would afford in case of a defect in the cable at any point, for finding and repairing it, as the cable could be lifted out of the water by aid of the buoys, and tested with the same facility as an operator will hunt for a defect in a wire along a line of poles, whereas, a single defect in the cable, according to the plan now progressing, would be equivalent to its destruction.

I do not regard the buoy feature of my plan essential to its success, as the cable can be sunk to the botton between the Stations, and thereby lesson the first cost of a Telegraph; but short circuits being, as I conceive, and as I think the scientific world will yet be forced to admit, a practical necessity in Submerged Telegraphs, I submit the plan of Floating Stations as the only practical system of connecting the two continents.

ALEXANDER HALL.

New-York, Feb., 1857.

The theory of Professor Hall we regard as entirely correct, in reference to the electric current. The distance between St. John's N. F. and Galway is 1646 miles.

The idea of buoying the cable, in order to know its whereabouts, is not new, though it were laid on the bottom of the ocean, where undoubtedly it should rest, to be entrely free from the abrasion of the sea. But the idea of floating stations, as set forth in his letter and illustration in the *Scientific American*, is too visionary to be for a moment entertained by practical men.—[EDS.]

"My reasons for predicting its failure are as f..."

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CROSSMAN'S IMPROVED RUDDER.

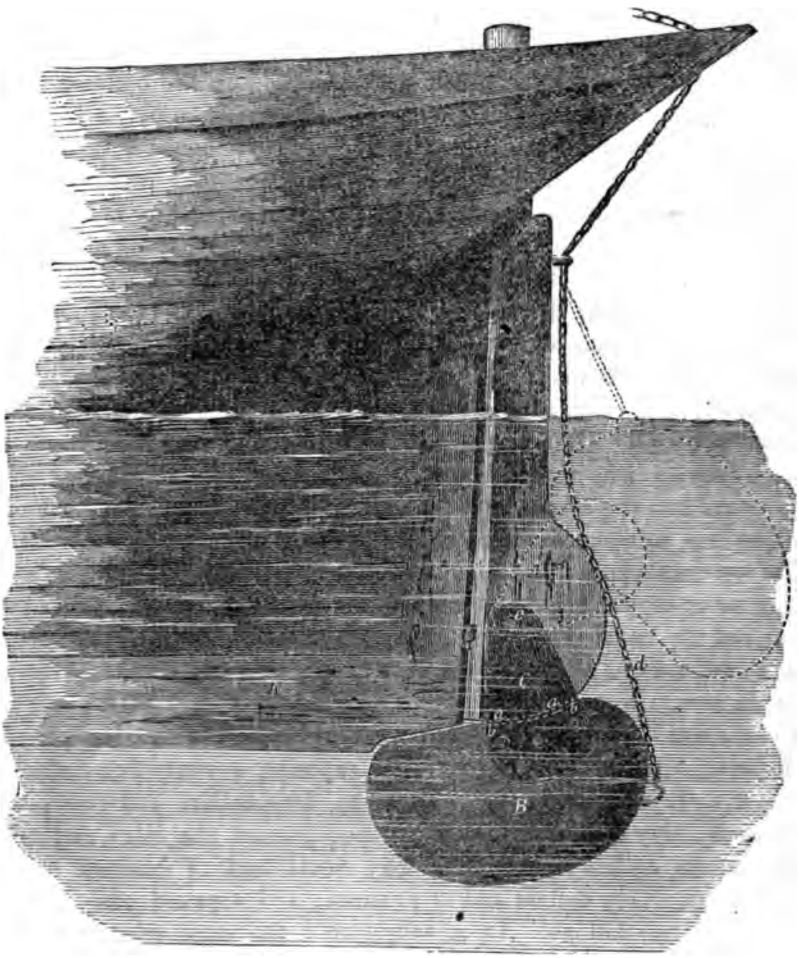
From the remotest period vessels have been steered by a rudder on the posterior extremity, the most common attachment for it being to the stern-post. By this arrangement the rudder is carried in the *lee* of the vessel, a condition which demands certain conditions of form in the model, in order that it may perform its office well. The aft ends of vessels have often been fined away sharp mainly with a view to steering, and hence it has arisen that the sterns of vessels have been practically excluded in the calculations of buoyancy. In some classes of vessels, good steering demands a greater reduction of buoyancy at the stern than a fair quality of speed. This is more particularly true of flat, broad vessels. In every instance where it is necessary to use a very large rudder surface, in steering, an improvement of the common rudder becomes highly valuable, as it is one of the first requisites of any vessel that she be easily steered. A comparatively small surface will be more effective than a large one, if placed *under* the vessel, rather than behind her, as now done. Whether it should be placed under the forefoot or the heel of a vessel, will depend upon a preference for rotating either the forward or after end of a ship in directing her evolutions. There are many considerations for placing such a surface, whether principal or auxiliary, under the heel of a vessel; the convenience of securing it from damage by contact with the bottom is not the least of these.

The nautical man will only require a glance at the accompanying illustration of Crossman's Rudder to perceive its utility in steering vessels of the description to which it is applied.

A, represents the ordinary rudder of reduced surface: B, is an extension piece, or auxiliary rudder. K, is the keel; C, is a metal plate which is fitted on each side, they are secured by bolts to B, and by an axis pin, C, they *hang* the extension piece to the main rudder. The elevating chain, D, is secured to an eye in the piece, B, and passes up through a block and over the stern; by it, B, can be raised to the position shown by the dotted lines. A weight is attached to the back of the piece, B, sufficient to cause it to remain in its place when the vessel is under-way. If the piece, B, should strike the bottom in shoal water, it will swing aft and rise out of danger, and drop into place as the water deepens. Where the water may be too shoal for using it in the lowest position, this auxiliary rudder will do effectual service at any elevation. When it is under the keel, however, the strain on the rudder stock is very much less, as it then passes nearly through the middle of the two blades, and the steering is very easy.

Crossman's Rudder has been in use or applied to the sloop, *Water Witch* for several months, and her master, Richard Estell, declares that

while the common rudder was in use upon her, it required a strong man with the help of tiller ropes to steer her in a stiff breeze, and particularly before the wind she ran so wildly as to be scarcely manageable, but since the improved rudder has been applied she is by far the best steering vessel he was ever on board of. Wheels and gear may be dispensed with, where this rudder shall be adopted.



Capt. Edward Downing of the schooner *Flying Fish*, on which vessel this rudder has also been applied, bears similar testimony. It is especially serviceable in severe gales, and in running before the wind [illegible] heavy sea, forasmuch as it never is pitched out of water as the c[illegible]dder is frequently, in flat vessels engaged in the coasting trad[illegible]

For further particulars, address A. B. Crossman, [illegible]ton. New-York.

PAY AND PENSION.

The fluctuating condition of sailors constitute them, to a certain extent, a commercial commodity—valuable in proportion to scarcity.

In the origin of our navy the rates of pay were based upon the then commercial pay—twelve dollars for seamen, ten for ordinary seamen, eight for landsmen, and six for boys. In the merchant-service the *par* of sailors' wages depends upon the fluctuations of trade. In time of peace, when commerce is brisk and agriculture profitable, sailors are both scarce and high. War, by obstructing commerce, throws out of employ a large number of merchant seamen and agricultural laborers; hence it is that naval seamen then become abundant, but are always scarce in proportion to the durance of peace. Their abundance in the navy depending not upon their increased value, but upon the obstruction of a better paying and more respectable occupation. Small pay is not only a cause of scarcity, but it is the chief cause of the degradation of sailors. Having always been considered as *laborers*, no apprenticeship has been deemed essential to qualification. The degraded from whatever occupation, or the criminal who would fly from justice, have always found open arms to *all* men in the "State's service." The shipping articles are—and always have been—such as to admit all who would forswear their identity—the nursery of the scape-grace and the school of vice, and the lad who enters the service usually becomes an adept in crime ere he becomes a master of his trade.

The merchant-service has made a constant advance in the value of sailors, having some regard to, but still below the prices of labor in other avocations; but the naval service has advanced so little that in reality there has been no advance at all—twelve dollars being virtually more in 1796 than eighteen now. Notwithstanding this, the pay of officers has been increased to an average of fourfold what it was in '96, and is still justly deemed inadequate. At first the pay was—for captains, seventy-five dollars per month and six rations per day; surgeons, fifty dollars and two rations; lieutenants, forty dollars and three rations; pursers, chaplains, and sailing-masters, forty dollars and two rations; lieutenants of marines, and surgeon's mates, thirty dollars and two rations; and forward officers, twenty dollars and two rations. As already stated, the same grades of officers now receive an average of four times as much, and others in proportion, while their pay is still much too small, and badly proportioned. In amends for this, in the early history of our navy, 1800, it was enacted: "That every officer, seaman, or marine, disabled in the line of his duty, shall be entitled to receive for life, or during his disability, a pension from the United States, according to the nature and degree of his disability, not exceeding one-half his monthly pay.

"That all money accruing, or what has already accrued to the United States, from the sale of prizes, shall be and remain forever a fund for the payment of pensions and half-pay, should the same be hereafter granted to the officers and seamen who may be entitled to receive the same; and if the said fund shall be insufficient for the purpose, the public faith is hereby pledged to make up the deficiency; but if it should be more than sufficient, the surplus shall be applied to the making of further provision for the comfort of disabled officers, seamen, marines, and for such as though not disabled, may merit by their bravery, or long and faithful services, the gratitude of their country."

Subsequent laws provide that widows or children of officers, seamen, or marines belonging to the navy, who may have died in consequence of wounds or other disability contracted while in the line of duty, shall be entitled to receive half the monthly pay to which the deceased was entitled at the time of his death, to be paid out of the pension-fund. A little later this was modified so "that the rate of compensation to non-commissioned officers, seamen, and marines, shall never exceed five dollars per month." After a few years' tolerance, this injustice was removed and pension allowed according to first provision. In 1842, the sum of eighty-four thousand, nine hundred and fifty-one dollars, was appropriated to make up deficiency in the pension-fund necessary to meet payments then to fall due. In the progress of necessity for naval seamen, bounty also was instituted as an inducement to the service, instead of an increase of pay. The abundance of naval seamen in time of war was wrongly attributed to what purported to be ample provision. But the commercial prosperity of the country in time of peace, and the uncertainty and expense of securing pension in case of necessity in the navy, soon rendered the pay of naval seamen not only much less than the pay in the merchant-service, but far below that for any class of laborers for any avocation known in our country.

If the navy had always paid as much as the merchant-service for seamen, there never would have been a scarcity of them, for, excepting the pay, the inducements in the naval are superior to the merchant-service. The room for the employment of boys and landsmen in the navy attracts a large number who find no employment in the merchant-service; and if their pay, on becoming seamen, was as good, they would doubtless continue, for first service would contract a preference.

Of late years there has been an advance on th[illegible] all kinds of labor, far out of proportion to that of a long pe[illegible] ng commands more money—money only has [illegible] no less aware of this than other men, and [illegible] ment to them as to others. Whatever

a means to effect their own ends, and for this they appreciate the value of dollars and cents to the same extent as others who labor for pay. No *seaman* will serve in the navy for eighteen dollars per month when he can get more than twice that amount in the merchant service.

Notwithstanding the small pay of naval seamen, by an act of 1799, and ever since, they are required to provide for themselves in case of continued sickness or disabilty, by having twenty cents a month deducted from their wages. The amount thus provided is the Naval Hospital Fund, which members of Congress have proposed to take one half of, and *give* to the army! And as if this were not enough, the Honorable Attorney General busies himself in construing away bounty, and interpreting the line of duty for others, until the long served-for and hard-earned pension is more likely to be gained by the vilest vagabond, than what it was designed to be—a something to look forward to by those who would wear themselves out in the service on a mere pittance, barely sufficient for the most limited wants of a single individual.

Prize-money was instituted at the same time as the privateer-service, during the Continental Congress, and only differs in proportion distributed from that of later date, the share to the captors, in its origin, being one-third. In 1798 it was differently proportioned, according to the nature of the case, giving to the captors the whole proceeds when the captured party was of equal or superior force, and in other cases one-half.

The proceeds of "all money accruing," &c., of the act above referred to, are the residue of the prize-money—*all* equally earned by the sailor—*paid into the national treasury*, and out of this the pension fund was created. The *government*, in reality providing *nothing*, but now *claiming all*. The government sailor, not only compelled to labor harder, but on smaller pay than the vilest emigrant to our shores can command on the day of his arrival, is now *construed* out of his bounty, *interpreted* out of his pension, and obliged to serve twenty years for an asylum, though all these are the legitimate fruits of his own earnings.

Following the sea, is surrounded by essential difficulties which constitute it the most toilsome and dangerous of all occupations. The lives and limbs of sailors are in constant jeopardy, and their fatigues are more excessive than is possible to any other livelihood—the issue of life or death, depending upon labor and deprivation under the severest discipline—notwithstanding, sailors are paid less than any other class. Government robs them of their hard earnings, and by late regulations—the naval apprentice system—legalises them into the only serfs known to our laws.

Men ashore in following whatever pursuit are valuable in proportion to the difficulties attending it, but the sailor who follows the most difficult of all trades, is paid least! In no other country is labor so valuable as in the

United States, and that our sailors should receive more than those of any other nation, and as much as those who follow less arduous pursuits, is a truism which no one will attempt to gainsay. "Sailors' rights" has so long been the pass-word of those who quietly look on and suffer sailors *wrongs* to continue, that *seamen* no longer look to the navy for a just appreciation of their service. The level of man-o-war sailors has long since sunk too low to maintain a "strike," and no member of Congress would now stoop so low as to represent them. But *seamen* have their wages.

One year ago when agriculture was profitable and commerce most brisk, and when merchants were paying seamen forty-five dollars per month, naval seamen had their wages raised to *eighteen!* The discrepancy still continues. Meanwhile the pension, so long deemed to be a laid up fund in the national treasury—the sailors savings-bank—has been construed into such uncertainties as to be not worth seeking. Bounty removed—*taxes* only continued. They must still pay their twenty cents a month, or rather, have twenty cents withheld from their pay, pay half their prize money into the treasury, and withal, pay profits on small stores, *supplied by the government at more than their cost!*

Even at the *same* monthly pay, the naval would realise less than the merchant sailor. The contract clothing supplied to the navy, and of which every man in the service is compelled to have a certain amount at government price, costs the naval seaman more than twice that which is necessary to the merchant service. The *necessary* clothing, bedding, ration utensils, &c., of the naval seaman, cost him not less than six dollars a month, while the merchant seaman's need not cost him more than three.

Thus robbed and peeled, from what other source can the government obtain seamen than that it does—the rejected and the dishonored, the criminal and the outlaw. Government is now reaping the reward of its negligence, and the merchants are sharing it. The *hire* is only worthy of its *laborers*. *Seamen* have become so scarce that few exist, and "sailors" have almost ceased to be men.

Officers in the navy have influence, can make their grievances known, and whole sessions of Congress may be devoted to the investigation of a disputed wrong to one man; but the thousands of subordinates have no one to cry out against their long unheeded and unheard grievances—they have no representation. The inducements for officers in the navy are entirely different from those of seamen. These latter have to labor *manually* for their living, and they should be paid according to the value of labor elsewhere; but the former attach much importance [illegible] of the employment, and the certainty of the emolument, a[illegible] l. Yet offices in the navy must ere long cease to comm[illegible] unless

the pay is very materialy increased. No man can live on honor, and honor generally bears some proportion to emolument.

While the pay of captains in the navy has been increased to from eighteen hundred to thirty-five hundred dollars, according to the command, merchant captains of large ships have increased to from four thousand to fifteen thousand dollars per annum. Besides, the navy lieutenant who serves on fifteen hundred dollars is frequently an older man than the merchant captain, who is eligible to a first command. Other offices, analogous to similar duties out of the navy, compare just as unfavorably. A naval constructor is paid but twenty-three hundred dollars, while first-class constructors out of the navy receive more than twice as much. The highest pay of most offices in the navy are unequal to mediocre pay of similar pursuits out of it. It is the policy of every individual who can, to demand wages for indispensible services, and it is surely no less the policy of the government to give the highest price, in order to secure the best talent. As our government does not, nor cannot use compulsion, it must of necessity offer superior inducements if it would have superior men in its service.

The government policy of laying up the sailors' money will never again be trusted. No one with proper self-respect will place reliance on "the public faith," however sacredly pledged, if it depends upon the interpretation of a new Attorney.

Let sailors be paid their wages *in full*, without government provision for speculating on any portion of their hard earnings, and they will be far more certain to leave a legacy than they now are, with an Attorney-General for an executor.

In no emergency should any part of the prize money be otherwis distributed than to the captors. Such rewards should be held out as a constant incentive to national service. Pension and provision for disability should be by the government, or not at all. Pay in government employ is as much his who earns it as if in the patronage of another, and sailors' rights acknowledge no justice in withholding it.

A Heroic Woman.—The clipper ship Neptune's Car, Captain Jacob Patten, sailed from New-York for San Francisco about the 29th of July last. The captain on the passage, was attacked with brain fever and subsequent blindness; the chief mate having been deposed from duty previous to the captain's illness, and the second mate being incompetent to navigate the vessel, the captain's wife, who happened providentially to be on board, and who had been taught navigation by her husband, took charge of the ship, and brought it safely into port.

GERAU'S IMPROVEMENT IN THE SAILS OF FORE AND AFT RIGS.

This cut of sail has had a thorough trial at sea, and finds a high degree of favor with all who have used it. It is illustrated by the accompanying engraving, and may be described as follows:

Applied to a brig—to dispense with the use of main gaff, with all the iron-work, peak halyard and blocks, but at the same time retains the advantage of an equal amount of canvas in the mainsail and topsail as with the gaff. In this rig the mainsail bends to the boom, and hoists up the mast, as in the common rig, but with the difference of hoisting to the masthead, instead of to the hounds, forming at once a storm trysail of large size, with reefs as usual. This sail can be set with one-half the hands required by the old rig, as there is but one set of halyards to man, and no gaff to take care of; it can be carried longer without reefing than the old gaff style can be close-reefed, and with less labor to the mast and vessel; when reefing is necessary, it is much easier and quicker done. This sail is cheaper to rig, to hand, and reef, and will wear much longer, nor is there any risk of losing gaffs and expense for replacing them. The topsail is bent to the topmast, as in the old rig, and furls at the mast-head the same. The tack hooks or hauls to the after-part of the maintop or cross-trees, the foot lapping on the leach of the mainsail, sheeting to a block at the end of the mainboom, and sets taut by a small tackle on the boom. In furling, the sheet is let go, it falls into the lee of the mainsail, and is brailed to the masthead as usual.

In fitting a new vessel for this rig, the masthead and mainboom may be a little longer than for the old rig, but the topmast should not be lengthened.

For a steamer, these sails can be applied to either fore, main, or mizenmasts, having the advantage of both square, and fore and aft sails, by rigging a taut stay from the topmast-head down to the lower mast-cap, for the mast-rings of the topsail to run on.

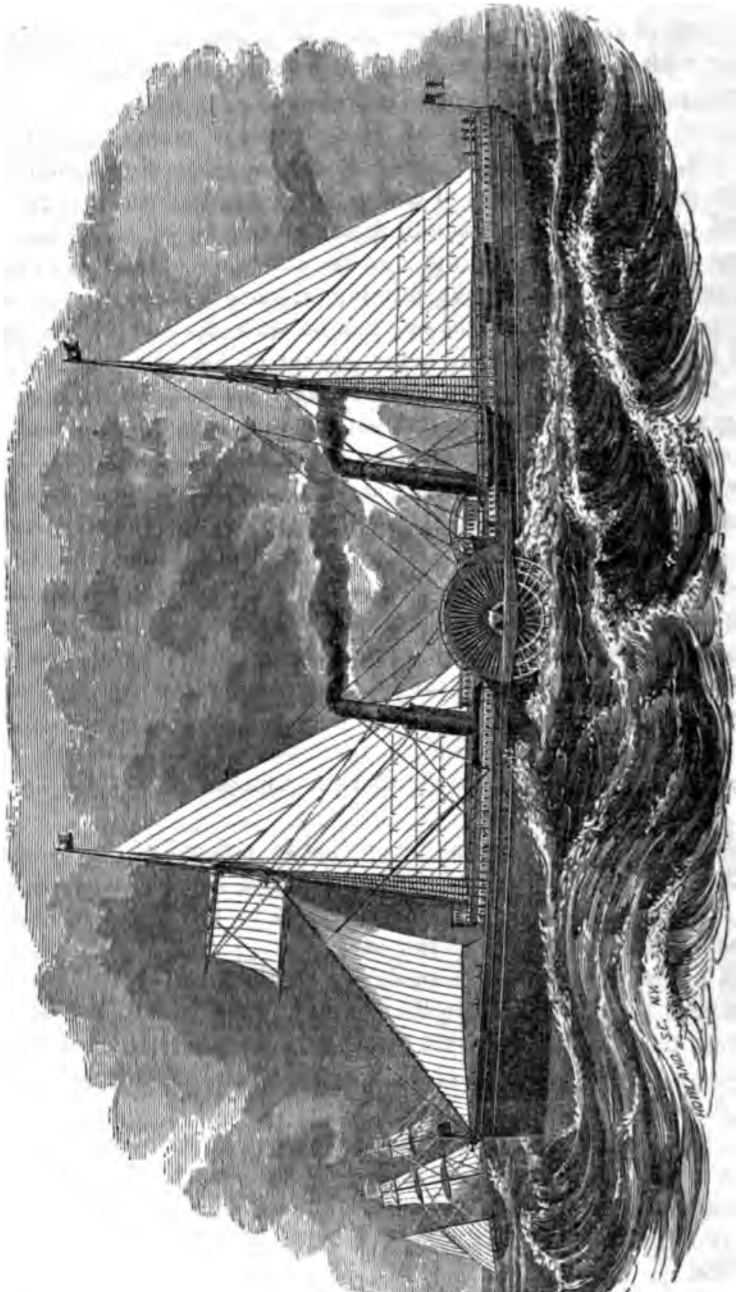
For a barque, the spanker is made fast at the head of the lower mast, and the tack lashed down as in the old rig; but to obtain the advantage of reefing, the mast-hoops should travel on a taut stay running from the trussle-trees down to the heel of the spanker-boom. The topsail to be fitted as shown in the cut.

For a sloop-yacht, the work is about the same as in the case of a brig.

The above improvement is recommended for a steamer, barque, brig, or sloop, but not for a schooner, except on the mainmast.

Above improvements patented by George W. Gerau, Brooklyn, July 29th, 1856.

The sails can be made by any sail-maker, by applying to the patentee, as above.


HOWLAND S.C. N.Y.

THE INSTITUTION OF QUARANTINE.

REMOVAL OF NEW-YORK QUARANTINE TO SANDY HOOK.

We find the following pertinent and forcible remarks upon the subject of Quarantine, and the change of its locality for New-York, in the *New-York Journal of Commerce*, and think we recognise in it the intelligence and spirit of a writer well known to the readers of the *Nautical Magazine*. We agree with him that the system of Quarantine requires to be stripped of its strait jacket, and altogether changed to suit the age. As at present administered, in our own or foreign countries, it is either an odious oppression, a humbug, or a farce, and often all three combined. Surgeons and masters of ships generally hold the institution in such disgust as to have an easy conscience in taking oaths upon health reports of ships; while owners and masters frequently live on *tampering* terms with Health officers. The public may not know it, but we do not hesitate to say that Quarantine affords *no protection* against contagious diseases—at least the exception is the rule in this country. It is a *costly* humbug, as shipowners know.

By all means let a few rays of hygeinic science be shed upon the system, if it is to be maintained, in order that it may ever so imperfectly guard the public health. *Time* should not be made an agent of purification for a disease stricken ship, and it must be remembered that *time* is money, which, in the end will have a more potent energy in the work, by modifying the opinion of Boarding Officers. It is wonderful how gold gives weight to such matters.

"Quarantine regulations in the United States originate with each State or city government; but they all have a common origin in the quarantine systems of the old world. As long ago as 1784 New-York had an "Act to prevent" such diseases as have never prevailed here, or against the extension of such as owe their existence to causes where they usually do prevail, to other places where like causes do not exist, and, consequently, where the same diseases never prevail, whether there is quarantine or not.

"Present laws compel all vessels last from places where epidemic diseases existed at the time of departure, or in case any such disease has existed on board during the voyage, if between the 31st of May and the 1st of October, to remain at quarantine for *at least thirty days after their arriv* *at least twenty days after their cargo shall have been discharged*, *further quarantine* as should be prescribed. All arriving betw of April and the 1st of November, and all from foreign po which *any person shall have been sick*, and all from south of C

from 31st of May to the 16th of October, and all from *any place* in Asia, Africa, the Mediterranean, West Indies, Bermudas, Western Islands, or any place south of Georgia, between the 1st of April and the 1st of November, shall be subject to such quarantine as shall be prescribed. Any vessel may be ordered from the wharves of the city to the quarantine-ground, and all persons and things introduced from any such vessel may be seized and returned on board, or removed to the quarantine. All cargoes, matters or things within the city, that may be putrid, or otherwise dangerous to the public health, may be ordered to the quarantine ground. All persons in the city, not residents thereof, who may be sick of an epidemic disease, are subject to being removed to the hospital at Quarantine.

"Quarantine, thus provided with everything essential to constitute it a pest-embankment, by authority of law, further provides that *every vessel* from any foreign port, *having passengers* on board, shall stop there! In case there has been any epidemic disease on board, showing that, in all probability, the condition of the vessel has rendered the passengers susceptible to any prevailing cause of disease—such vessel shall be detained at quarantine? *Any vessel* on board which any person has been sick or died, is obliged to anchor at quarantine and *there await* the directions of the Health officer, and all persons who are so unfortunate as to have been fellow passengers with one who has been sick or died have to *remain at quarantine until fifteen days after the last case* of disease shall have occurred on board the vessel in which they may have arrived, and *ten days* after arriving at quarantine.

"A place thus constituted, on the main entrance to the city of New-York —amid the thickly populated shores of either side—has justly become obnoxious to a large portion of our citizens, who have ceased to have their attention to the true causes of diseases any longer diverted by an antiquated deception.

"The tenements of olden times—in other countries—where lived the originators of quarantine, are monuments of darkness and dirt, unventilated and undrained—noxious exhaltations and impurities of every kind, there accumulated. Like unto such places are the dingy garret tenements and damp cellars on the narrow sunless streets and alleys near our wharfs, where diseases, erroneously said to be contracted from ships, prevail. Wharves, docks, courts, yards, gutters and cellars are left to steep in filth under the deception of a legalized diversion of public opinion to quarantine.

"Nor is this all. A ship may be built and sent to sea with no opening, save a hatchway, so that when it is closed, there is no light or means of renewing the air. The forecastle, where the sailors sleep, in small vessels especially, is rarely ever high enough to admit of an erect posture, and

from its position, it is frequently necessary to keep it closed, while, with the greatest care, it is subject to being wet. In stagnant harbors they soak in the drainage of towns, until not unfrequently putrid mud collects between the timbers, which generates or holds in reserve the seeds of disease, ready at all times to break forth with violence commensurate with *Quarantine*, or other atmospheric conditions favorable to its development. Emigrant ships, too, are frequently but poorly adapted to their purpose, while they are crammed with men, women and children of all ages and habits, without light, without pure air, with poor food, never properly cooked, scarcely water enough for eating and drinking purposes, and none whatever for cleanliness—the old and young of both sexes with no proper sleeping apartments, but only close, cramped berths, which will scarcely admit of change of position—boxes, bags, barrels and bundles piled up between them, never moved nor cleansed, from port to port, covered with the filth and abominations of hundreds of sea-sick, dispirited and disgusted poor people—with no ample provision for anything, excepting disease and death—fully fitted for reception at Quarantine. Away with the abominable nuisance! For more than four centuries, have the horrors of this institution, now far removed from all its contemporary barbarisms, been enforced and tolerated. According to every received theory and well authenticated fact, quarantine, as at present conducted, fulfils none of the conditions for which it has been maintained.

"It is the producer of what it pretends to prevent. By congregating together numerous ships, loaded with infectious goods from places prolific in the causes of epidemics; by keeping things thus infected confined in the dark, damp holds of ships to eke out their poison—and above all, by detaining persons in an atmosphere thus contaminated till they sicken and die:—it is in every aspect, as applied to persons, contrary to every principle of health and humanity—an obstruction to commerce and a public nuisance.

"Yellow fever, nor no other epidemic, is the product of specific contagion that can be stayed in its progress by the dictation of individuals; but *it and all diseases* against which quarantine has been supposed to provide, are the legitimate offspring of decomposing organic matter, and every thing which contributes to this, contributes to the rise and spread of epidemics.

"The necessity of destroying local nuisances of every kind, whether on land or sea, is essential to the promotion of health. Wharves, docks, courts, yards, cellars, garrets—or all these combined into a well constituted quarantine station—all accumulations of filth, shou[illegible] cleansed, paved and watered, or *removed*.

"The crowding of vessels for pas[illegible] the docks,

should be prohibited, and cargoes of perishable articles, should not be permitted to remain in bulk. Piles of wood, lumber and the like, should not be incessantly continued on or near the wharves.

"For vessels arriving in a foul state, provision should be made for a speedy unloading and the *immediate transfer of all persons* from them to a healthy atmosphere.

"Well ventilated warehouses, with ample provision for quickly unloading, cleansing and ventilating vessels found to be infected, so that goods from them can be freely exposed to the air, are all that is essential for ships and goods. As a quarantine station for goods, *Sandy Hook* is in every way adapted; and for this use neither the governor nor any other well informed citizen of New Jersey or anywhere else, who will take the pains to inform himself on the true causes of epidemics and contagion, can reasonably object to Sandy Hook as *the* place for quarantined *things*. With this provision, the Marine Hospital at Staten Island for *persons* actually *sick*, becomes wholly unobjectionable, endangers nobody. Provide only that persons on removing or being removed from an infected vessel or place, be not permitted to take anything with them till properly cleansed and purified, and there is no danger—no instance of epidemic disease ever being communicated to a healthy community by them.

THE MONTGOMERY BOILER.

MESSRS. EDITORS:—A correspondent who signs himself "L'Clair," appears to object to the Montgomery boiler being thought a specimen of American engineering, and calls for information with regard to the improvements which have been made in those just completed in this city for the steam yacht now building at East Boston, for the Pasha of Egypt.

I have seen these boilers, and without being able to present a drawing, or perhaps a complete description of them, I send you for publication, the following sketch, with what I understand to be the projector's views, and would like to know what "L'Clair" thinks of them. His great knowledge of the subject of boilers in general, will probably enable him to give us the why and the wherefore of their ability to perform according to the expectations of Mr. Montgomery. Fig. 1 is a plan of the four boilers as they will stand in the vessel. Fig. 2 is an end view, and fig. 3 a side view; *a*, *a*, *a*, &c. are the furnaces from which the smoke proceeds, as shown by the arrows to the connections *b*, *b*, whence it arises into the smoke-pipe *c*. The steam-drum *d*, four feet in diameter, adds to the steam capacity, and is supplied from each boiler by the pipes, *e*, *e*, *e*, &c., which run along the

whole length of the top of the boiler, and receive the steam through numberless small holes; *f* is the steam-pipe which leads to the engines. In fig. 2, in the left hand boiler, will be observed the sheets of iron *g*, *g*, and beneath their lower ends, the dished sheet *h*. These sheets, *g*, *g*, extend up through the water-space between the tube-box and shell to the top of the tube-box, and serve a double purpose, viz.: First, all the steam which is generated at the sides and tops of the furnaces, is carried up between the sheets *g*, *g*, and the shell, there being a space of one inch between the sheet and the shell, and four inches between the sheet and tube-box, the latter space being intended to facilitate the descent of the water to supply the lower ends of the tubes. The sides and tops of the furnaces are supplied from the back space *l*, the outside spaces communicating naturally with it and the middle space by the opening shown at *k*, in the right hand boilers of figs. 2 and 3. Secondly, the sheets *g*, *g*, receive all the scale which falls from the tubes and tube-sheets, and deliver it into the dished sheet *h*, from whence it may be conveniently hauled out through a man-hole in the front of the boiler.

Fig. 1.

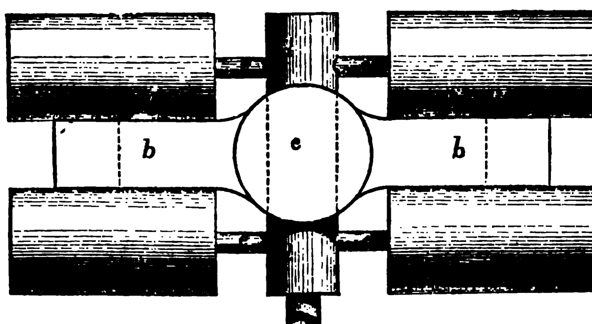


Fig. 3.

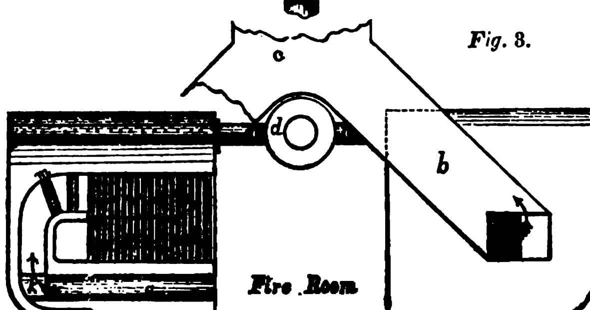
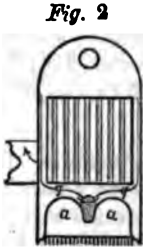


Fig. 2



The large tubes shown at *m*, fig. 3, are six inches ... ided into their places in the same manner as the ... x in number in each boiler. The object of these ... ent the first great heat of the fires driving the w ... urning

them out, as has heretofore occurred when the first heat acted upon the smaller tubes of two inches diameter. I do not know the exact dimensions of the boilers, but from having seen them, I should judge they were about twelve feet long each, twelve feet high, six feet wide, and placed about four feet apart, with a fire room of perhaps nine feet in width. Having given in the foregoing description and sketch the main features of this boiler, I leave it for "L'Clair" to substantiate, if he can, his violent attack.

HONESTY.

SHIPPING REVIEW.

FREIGHTS IN FEBRUARY.—The closing of the month of January, exhibited extremely dull rates, the ice in the rivers and harbors, as well as the snow in the streets, formed an effective barrier to active operations. A great scarcity of small and medium sized vessels continued.

Grain to Liverpool was taken at 7d. *a* 7½d.; no change of importance to note in any direction.

Feb. 4.—The market continued without important change, notwithstanding an increased supply of tonnage. Small bottoms continued in demand. Engagements to Liverpool showed grain, at 6½d. *a* 7d. in bulk; flour, 2s. 3d. To London, turpentine, at 4s.; grain, at 10d.; flour, at 2s. 11d. To Glasgow, flour, 3s. To California, the offerings were very light; measurement goods, at 22½c. To Melbourne, small engagements made at 27½ *a* 30c. Charters were made at the usual rates prevailing for the previous few months.

Feb. 7.—The market had increased in firmness, but prices did not advance.

Feb. 14.—The market continued firm, but quiet. The re-opening of southern and eastern harbors, promised to impart an impetus to the carrying trade. To Liverpool, grain rates were nominally 7d. *a* 7½d.; cotton at ½d. To London, rosin, 3s.; lard, 22s. 6d.; corn, 8d. To Antwerp, coffee, 5-16c.; logwood, 28s.; tobacco, 30s. Charters: a ship from Savannah to St. Petersburgh, cotton, at 1½c.; a schr., 170 tons, to West Coast of Africa and back, $700 per month. To south side Cuba and back, 42½c. and $3. A brig, 170 tons, to Porto Rico and back, $1,500; one 250 tons, to Surinam and back, $800 per month; Jacksonville to Philadelphia, flooring boards, $8 75; Union Island to New-York, lumber, $10; from St. Marys to Matanzas, $9 50; Newberne, N. C., to New-York, 60 *a* 65c. for spirits of turpintine; 35 and 40c. for other naval stores, and ½c. for cotton.

Feb. 18.—To Great Britain, rates were easier, with a slight increase of business. In other directions, there is no noticeable change, but a good demand continued for vessels adapted to the West India trade. To Liverpool, corn at 6d. and 6 3-4d. in ship's bags; cotton, 3-16d. *a* 7-32d. To California and Australia, offerings were extremely moderate, but rates unchanged. Charters: a barque, to Waterford, Ireland, corn, at 9d. To Cork and a market, about 10d; a barque to Matanzas, empty hhds., $1; a brig, 180 tons from Jacksonville to Port Spain, Trinidad and back to New-York, $2,000. Cotton freights from southern ports to Europe, dull at about 9-16d. An improvement in rates was in expectancy.

SEAMEN AND WAGES.

Sailors have become more numerous and advances have fallen since our last; rates are unchanged, except to the West Indies, where only $16 per month is now paid.

Feb, 18th, we quote:

		Wages.	Advance.
To Liverpool	per month,	$20	$20
London		20	20
Havre		20	20
North of Europe		20	20
Mediterranean and South America		16	16
West Indies		16	16
East Indies and California		15	30
Coasting		20	10

SALES AND PRICES OF SHIPS.

Sales for the past month have been very limited, and prices have ruled low for ships. Vessels from 150 to 300 tons will bring better prices, and command better freights, proportionately than those above 800 tons. Our builders would do well to bring into market more vessels of the smaller class, and fewer large ones. The unprecedented losses of the present winter must eventually increase demand for shipping. Barque J. A. Lee, Robbinston, Me., 506 tons, sold at auction by H. Harris & Co., for $17,200, cash, and 4 and 6 months, interest added, complete for sea, $34 per ton. Maine ship-builders cannot afford to do such a business. We hear of no other sales important to note.

In the Market.—New freighting-ship Paul Curtis, now at the wharf in Boston, and fitted for sea in the most thorough and approved manner. This is a ship worthy of the age, and the attention of owners. No man's reputation as a builder stands fairer at the East than does that of Mr. Paul Curtis, and the name of the ship is, therefore, indicative of her qualities. The dimensions are—length, 199 ft.; main breadth, 39 ft.; breadth for tonnage, 37 ft.; depth, 24 ft.; deadrise, 12 inches; will carry 4,300 bales of cotton, and be sold when a *fair price* is offered.

Messrs. Pratt & Osgood have a first-class ship for sale.

SHIP-BUILDING.

At Milan, Ohio, (on Lake Erie,) Messrs. Merry & Gay are building 3,200 tons of merchant shipping. In addition, they are constructing six revenue cutters for the government. The number of hands employed by the firm, is 260, at wages from $1 to $3 per day.

Captain Salmon Ruggles is building two schooners of 305 tons each, and Messrs. Smith & Kelly one of 300 tons. Thus making an aggregate of 4,110 tons shipping under construction at that point.

When it is considered that not less than 325 men are employed in this branch of business, who represent and give direct support to not less than 1,300 individuals, some idea may be formed of the importance of the ship-building interest to Milan.

In Buffalo, there are at present on the stocks in the vario[illegible] [illegible]orty-six steamers, propellers and sail vessels, of 16,210 tons burthen, [illegible] [illegible], are valued at $1,084,000. When we add to this the la[illegible] numbe[illegible] [illegible] tract, which are to be built there the present season, the total [illegible] early part of the summer, will exceed 20,000 tons, at a value [illegible] tonnage of that district as appears by the books of the Cust[illegible]

DISASTERS AT SEA.

SHIPS.

Spray of the Ocean, got on shore at the South Bank, got off after discharging cargo.
Rockland, at Provincetown, from Calcutta, lost sails, &c., towed into port.
Typhoon, from Liverpool to New-York, damage to spars and rigging.
Pacific, from New Orleans to New-York, leaky, &c.
Orissa, of and for Boston, from Calcutta, went ashore at Cohasset Beach, and bilged.
Thornton, New-York for Liverpool, ashore at Rock Ferry, in the Sioyne, got off.
Jane H. Glidden, of Boston, in lat. 40°, long. 50°, was abandoned, water-logged, &c., crew saved.
Avoca, New-York for Bristol, arrived at Waterford Passage with decks swept, and loss of part cargo.
Majestic, water-logged, but arrived at Liverpool.
Bombay, of Boston, leaky, at Cork for repairs.
Volga, at Elsinore, of and from Boston, on shore at Stevens' Head, towed into Copenhagen for repairs.
Amy Chase, from New-York, at Gibraltar, had decks swept, and other damage.
Jennett, of New-York, at Port Adelaide, struck a reef in Gaspar Straits, lost cut-water and part cargo.
Indiaman, from Boston, at Manilla, drove on shore, lost fore and main-masts, &c., got off.
Arcadia, from Singapore, dragged ashore, sprung a leak, damaged cargo, &c., got off.
Boston, at Manilla, ran foul of ship Santa Lucia, both suffered loss.
Kensington, at Hong Kong, had decks swept, lost sails, &c., and portion of cargo.
Gulf Stream, at Acapulco, from Cardiff, lost some spars, off Cape Horn.
Volga, Riga for Boston, went ashore, Dec. 25th, at St. Stephen's Head, near Falsterboro.
Shirley, New-York for Mobile, ashore on the Bahamas' Banks.
Lilias, at Liverpool, was struck by lightning, Dec. 24.
Sea Queen, Leghorn for New-York, sprung and lost some spars, Dec. 14, put into Southampton, Eng.
Maid of Orleans, at New-York from New-Orleans, lost sails, &c., sprung a leak.
Unknown, seen Dec. 26, lat 37° 8′, lon. 69° 37′, with loss of main and mizen-masts.
Wellington, at New-York, from New-Orleans, lost sails, &c., sprung main-mast, Dec. 21st.
Cynosure, at Havre, from New-Orleans, grounded in entering, Dec. 20.
Echo, at Greenock, from New-York, had decks swept, lost sails, &c., one man lost.
Martha's Vineyard, from New-York, got ashore on the Clyde river, Dec. 22.
Ontario, for New-York, grounded in leaving Liverpool, and leaks.
Capitol, Baltimore for Liverpool, abandoned at sea, crew saved.
Andalusia, Cardiff for San Francisco, put into Rio Janeiro, Nov. 22, leaky.
Marshfield, Trapani for Boston, put into Charleston with loss of sails.
Amanda Spear, in collision and lost some spars in entering Havre.
California, at Gloucester, from Surinam, had decks swept, Dec. 22.
Union, at New-York from New-Orleans, lost sails, &c., and sprung a leak.
Abælin, for London, returned to Boston, struck a sunken wreck, and leaks.
Irene, Liverpool for New-York, got ashore, Jan. 23, at Moriches, L. I.
Calvin, (Br.,) New-Orleans for Liverpool, went ashore on Pickles Reef, Jan 12th.
Ophir, New-York for New-Orleans, totally lost on the Ginger-bread shoal, Jan. 24th.
Robert L. Lane, from Liverpool, lost sails, boat, &c.
G. B. Lamar, London for New York, put into Fayal, Dec. 10, leaky.
West Point, New York for Liverpool, grounded, Jan. 8, on Burbo Bank.
Sea Eagle, Boston for Calcutta, totally lost at Murray's Bay, Africa, Nov. 16th.
Sarah Boyd, totally lost at Gergenti, Dec. 16th, crew saved.
Sultan, in Hampton Roads, from Chincha Islands, lost sails, some spars, &c., and leaks.
Franklin King, New York for Liverpool, abandoned Jan. 10, lat. 36° 45′, lon. 53° 49′.
Brightman (Br.), St. Stephen's, N. B., for London, water-logged and abandoned, Dec. 15, mate lost.
James Buchanan, Liverpool for Mobile, lost near Deangarvan, about Jan. 6th.
James Howes, in collision with ship Bothnia, (Br.,) in Penarth Roads, both much damaged.

Lion, London for Calla, ashore at Kingsdown, Jan. 6th.
Natchez, (whaler,) of New Bedford, went down, Oct. 7, in Ochotsk Sea.
Lady Raglan, Cardoff for Norfolk, put into Milford, (Eng..) Jan. 14, leaky.
Coquimbo, for United States, put back to Callao, Dec. 15th, leaky.
Russell, at Havre, sprung a leak, Dec. 12.
Charlotte, New Orleans for Leghorn, put into Savannah, leaky, had been ashore.
William Penn, Liverpool for Boston, ashore at Willingsgate Point, Jan. 26.
China, Liverpool for Baltimore, put into Fayal, leaky.
Centurion, Liverpool for New York, put into St. Thomas, Jan. 19, leaky, lost some spars.
Simoon, Chincha Islands, (not American clipper,) was seen at sea, a total wreck.
Middlesex, Boston for New York, put into Bermuna, leaky.
John Miller, (Br..) Newry, (Ireland,) wrecked below Savannah.
Taniscot, New-Orleans for Liverpool, totally lost, Jan. 8th, on Sandy Cay, Grand Bahamas,
Lord Ashburton, Toulon for St. Johns, N. B., wrecked at North Head, 21 lives lost.
Monsoon, at Melbourne, from New York, lost some spars.
Lizzie Dreno, at Havana, from New-York, cut away mizen-masts, Dec. 24, to save vessel.
Horner, went ashore near Monomy, Jan. 17th.
China, Liverpool for Baltimore, put into Fayal, Jan. 10, leaky.
Margaretta, Shields for New York, abandoned Jan. 13th, with loss of rudder, and leaking.

BARQUES.

New Empire, Mobile for Boston, struck on Cohasset Rocks, bilged, &c., crew saved, except one man. Valued at $20,000.
Tedesco, from Cadiz, for Boston, went ashore on Swamp Scott, vessel, cargo, and crew lost Valued at $8,000.
Lucy Ann, Matanzas for Boston, ashore at Fort Adams, near Newport, filled with water.
Abeona, hence at Lisbon, lost part of cargo, and sustained much damage.
A. C. Cochran, of Searsport, went ashore three miles east of Race Point Light, crew saved.
Livorna, of Thomaston, missing, supposed to be lost at sea.
Island City, from Galveston, for Boston, lost masts, rudder, and anchor, towed into Boston.
Lamplighter, of New York, was off Bermuda in distress, driven out to sea.
Reindeer, from Rio, for Philadelphia put into New York in distress, leaking badly, men frozen, &c.
Ida Raynes, from Maracaibo, lost sails, boats, spars, and was otherwise damaged.
Ocean Wave, Table Bay for Boston, put into New York in distress.
Sacsusa, at St. Thomas, in distress, Jan. 16th.
Kilby, lost on Goodwin Sand, near Deal, (Eng.)
Hesper, of Newburyport, from Cronstadt, for Boston, missing, supposed lost at sea.
Triton, ashore near Truro.
hieftain, missing, supposed lost at sea.
Baltimore, Rio Janeiro for Baltimore, put into Charleston, Jan. 8th, leaking, cast over some cargo.
Express, at New-York, from Havana, lost sails, &c.
Esther Frances, at New York, from Amsterdam, lost sails, rail, bulwarks, &c., Nov. 30th.
Lucy and Frances, Brookville for Havana, grounded, Jan. 8, on an unknown rock.
Roger Stewart (Br.) Pictou, N. S., for Boston, was totally lost, Jan. 11, in entering Arichat.
J. A. Hazard, at New Orleans, from Rio Janeiro, lost some spars, sails, &c., put into Bahia.
Londonderry, at Savannah, from Troon, lost sails, &c.
Jennett, at Port Adelaide, had been grounded on a coral reef.
Elizabeth J., Savannah-la-mar for New York, put into Bermuda, Jan. 15, lost sails, &c.
Byron, Cardenas, was driven ashore by the ice, Jan. 16th, in New York bay.
Triton, at Boston, ran foul of brig Sarah, and lost some spars.
Samuel Moxley, at Newport, slightly damaged in collision with schooner Rep
O. J. Chaffee, at New York, from Havana, shifted cargo, and otherwise damag
Nebask, Cuidad Bolivar for New York, put into Wilmington, N. C., Jan., 22, sails.
Mary, at New York, from Trinidad, lost some spars and sails, leaking, and
J. C. Nickels, at New York, from Rio Janeiro, sprung a leak, Jan. 17, one m
Phantom, drifted ashore, Jan. 19, at George's Island, Nantucket Roads.

BRIGS.

William D. Shurtz, Richmond for New York, abandoned, leaky, off Cape Henry.
William Skinner, Baltimore for Mobile, 359 tons, lost at Spanish Coy, Abasco, Jan. 12.
Fawn, San Francisco for Coose Bay, capsized off Umpqua river, Nov. 22.
Leviathan, New York for Oporto, caught fire, Jan. 2d, put into Bermuda.
Colorado, from William's Landing, put into Santa Cruz., Cal, previous to Dec. 18.
Dream, (Br.,) St. Johns, N. B., for Matanzas, lost at Berry Island, Dec. 21.
William T. Dugan, Port-au-prince for New-York, put into Nassau, N. P., Dec. 22, leaking.
Amonoosuck. at Aspinwall, from Pensacola, lost and sprung spars.
Scotia, at Philadelphia, from Pernambuco, lost sails, anchor, cable, &c.
G. W. Russel, Rio Grande for New York, was spoken Dec. 27, leaky, had lost sails, some spars, &c.
Marcia, Kingston, Jam., for Philadelphia, put into Charleston, Jan. 12, leaking, lost sails, &c.
Vista Ellen, was abandoned, Dec. 26, all hands saved.
Arcadian, Savannah for St. Johns, N. B., went ashore, Jan. 11th, on Patch's Beach.
Anita Owen, at New York, from Neuvitas, lost some spars, &c.
Trenton, Charleston for Barbadoes, put into Nassau, N. P.. leaky.
Lady Seymour, (Br.) New York for Halifax, returned to New York Jan. 14th, leaking.
Ann, Philadelphia for Portsmouth, N. H., put into League Island Piers, Jan. 13, lost rudder.
Auburn, Philadelphia for Jamaica, dismasted, water-logged, and abandoned, Dec. 29.
A. P. Fluker, at New-York, from Jackmel, lost sails, &c.
Geneva, Georgetown, S. C. for Boston, totally lost on Scituate Beach, Jan. 16th.
Emeline, Gonoives for Boston, totally lost, Jan. 15, at Long Branch, New -ork, all hands lost.
Mozell, at New-York, from Aspinwall, lost sails, and sprung a leak.
Sarah, Bernice, at New-York, from Port-au-Prince, lost sails, deck load &c.
Austin, at New-York from Matanzas, lost sails, &c.
Anne A. Lyng, at St. Mary's, Ga., from New-York, lost sails, boat, &c.
Plowshare, at Gloucester, Mass., cut away masts, to save vessel.

SCHOONERS.

Reindeer, Vienna, Mel., for Providence, went ashore, Jan. 8, near Providence.
Bee, Norfolk for Philadelphia, was spoken, lost deck load, sails, &c.
Martha Washington, grounded in leaving Plymouth Harbor.
Mediator, returned to New Orleans, Jan. 7, leaking badly.
Marmora, at Savannah from New-York, lost sails, &c., had decks swept, Jan. 20.
Maria Henrietta, St. Johns, N. B., for Portland, dismasted, and abandoned, Jan. 14th.
J. W. at New-York, from Boston, was ran ashore to escape the ice.
Mary Charlotte, 120 tons, Baltimore for Boston, abandoned, Jan. 20th, Lat. 38° 10′ Lon. 71° 34′.
Saran C. Ingle, Alexandria for New-York, abandoned, Dec. 24, leaky.
John G. Heckscher (herm.) New-York, for London, abandoned Dec. 22d, and sunk.
Jessie Ann, (Br.) Charlotte town, P. E. I. for Boston.
Citizen, at New Bedford, from Norfolk, had decks swept, lost some spars, &c.
Unknown, ashore at Seven-foot-knoll, Chesapaake Bay, Jan. 10th.
A. B. Neilson, (Pilot Boat No. 21), driven ashore on Long Island by the ice.
Sylvia, 134 tons, abandoned, Dec. 30, leaking badly.
Conquest, (Br.) Salem for Maitland, N. S. totally lost, Dec. 20, near Vinalhaven, Me.
Assund, Norfolk for Boston, in contact with a schooner sprung bowsplit &c, at Newport.
Vendovi, at New-York, from Cape Haytien, lost sails, boat, deck-load, &c.
Moonlight, Philadelphia for Mobile, struck on the Bahama Banks, Jan. 10th.
S. D. Hart, Jacksonville for New-York, put into Newport, lost deck-load, sails, &c.
Lord Raglan, (Br.) St. John's, N. B. for Boston, put into Sidney, C. B. lost sails, &c.
Standard, East Florida for New-York, was abandoned, crew taken to Halifax, N. S.
H. M. Jenkins, Boston for Belfast, put into Beverly, Jan. 21, lost sails, boats &c.
Albert Mason, at N. Y. from Charleston, lost deck-load, some sails, &c.
J. H. Fickett, James River for Philadelphia, abandoned, Jan. 15, crew saved.

NOTICES TO MARINERS.

Fixed Light on Lepso Reef, West Coast of Norway.—Official information has been received, at the office of the Light-house Board, that the Royal Norwegian Marine Department at Christiana has given notice that on and after the 5th day of December, 1856, a light would be exhibited on board a light-vessel moored off the south-eastern part of Lepso Reef, at the entrance to Wigra, or Koald's fiord, on the west coast of Norway.

The light is a *fixed white light*, visible all round the compass. It is placed at a height of twenty-five feet above the level of the sea, and should be seen from the deck of a ship in ordinary weather at a distance of five nautical miles It will hereafter be lighted from the 1st of August to the 16th of May, from sunset to sunrise.

The light-vessel is placed off the south-eastern part of Lepso Reef, (Lepsorev,) in a depth of three fathoms at low water, and opposite the farm-houses of Gamlen and Sorhoug. It lies in lat. 62°, 35½' north, long. 6°, 14½' east of Greenwich.

Vessels coming from the north-east, and seeking to pass the reef, must, when clear of Rognholm Island, bring the light-vessel to bear S. W. ¼ W. Westerly, keeping this course until close on the west side of the vessel, then, with courses from W. by S. ¼ S. to W. N. W. ½ N., they will pass clear of everything.

When approaching from the south and west, and being clear of Hanene, bring the light-vessel between E. by N. ½ N. and E. S. E. ½ S., keep her so till close on the west side of the light-vessel, when alter course to N. E. ½ E. easterly, which course will clear the reef.

At present a wreck lies 3½ cables to the north-westward of the light-vessel.

All courses and bearings are by compass. Var. 21° W. in 1856.

Thornton A. Jenkins.

Washington City, Jan. 31, 1857.

Flashing Light at Kara Burun, Black Sea.—Official information has been received at the office of the Light-house Board, that the Turkish government has given notice that on and after the 5th day of December, 1856, a light would be established at Kara Burun, or Black Cape, on the coast of Rumili, in the Black Sea, about 22 miles to the north-westward of the entrance of the Bosphorus.

The light is a flashing light, with eclipses, or intervals of darkness, following each other every ten seconds. The illuminating apparatus is a catadioptric lens of the first order. The light is placed at an elevation of 302 ft. above the mean level of the sea, and should be visible, in ordinary weather, from the deck of a ship, at a distance of 22 miles.

The light tower is 27 ft. high from the ground, and stands in lat. 41° 19', 15" [?] N., lon. 28° 40' 9" [?] W. from Greenwich.

Thornton A. Jenkins.

Jersey—Channel Islands—Fixed Light at Verclut, St. Catherine's.—Official information has been received at the Office of the Light-house Board, that the Lords Commissioners of the Admiralty have given notice, that on and after the 1st day of January, 1857, a light would be exhibited from the light tower recently erected at the outer extremity of Verclut pier or break-water, on the north side of St. Catherine's Bay, on the east coast of Jersey, one of the Channel Islands.

The light will be a *fixed white light*, the illuminating apparatus a lens of the fifth order. The light is placed at a height of 60 feet above the mean level of the sea, and should be visible in ordinary weather from the deck of a ship at a distance of from 7 to 10 miles.

The light tower is an octagonal structure of iron, painted white. It is 30 feet high from base to vane, and stands on the outer extremity of the parapet wall of the pier, in lat., 49° 13' 18" N., long. 2° 1' 12" W. from Greenwich, nearly.

The tide at Jersey ranges 20 feet at neaps, and 36 feet at ordinary springs.

Washington, Jan.27th, 1857.

Temporary Light on Key Piedras, Port of Cardenas, Island of Cuba.—Official information has been received at the office of the Light-house Board, through the Department of State, that a temporary light has been established at the entrance to the harbor of Cardenas, in the Island of Cuba, in place of the light-house at the place which was destroyed in

the gale of the 28th August last. The light is exhibited at an elevation of 70 feet above the mean sea level, in Lat, 23° 14′ 21″ N., and Lon. 81° 7′ 43″ W. of Greenwich.

THORNTON A. JENKINS.

Washington, Jan. 29th, 1857.

CHESAPEAKE BAY.—The York Spit, Wolf Trap, and Windmill Point Light-Vessels have been driven from their stations by ice. Due notice will be given of their return.

Norfolk, Jan. 30, 1857.

The Stratford Shoals, Cornfield Point, and Bartlett Reef Light-Vessels have been moved from their stations.

They will be replaced and their lights exhibited as heretofore, when navigation re-opens, and Long Island Sound is free from ice.

A. LUDLOW CASE, L. H. Inspector, 3d Dist.

New-York, Jan. 27, 1857.

LIGHT VESSEL IN CHESAPEAKE BAY.—The Willoughby's Spit Light Vessel has been returned to her station.

W. H. Murdaugh, Light house Insp.

Norfolk, Feb. 12, 1857.

The Iron Spindle and the Spar Buoy which marked the Fishing Rocks, at the entrance of Kennebunk River, have been carried away by the ice. They will be replaced when practicable.

GEORGE H. PREBLE, Light house Insp., 1st dist.

Portland, Feb. 13, 1857.

The ice has carried away the Spar Buoys from Adam's fall and Southwest Ledge, entrance of New Haven Harbor.

The Sandy Hook Light Vessel has been removed to her station, and her lights will be exhibited nightly as heretofore.

A. LUDLOW CASE, Light house Insp 3d dist.

New-York, Jan. 28, 1856.

A second class black Nun Buoy has been temporarily placed off Harding's Ledge, Boston Bay.

A second class black Can Buoy has also been temporarily placed off Graves Ledge Boston Bay.

A black Spar Buoy, No 1, has been replaced off Point Alderton Bar.

C. H. CALDWELL, Light house Insp. 2d dist.

Boston, Feb. 17, 1857.

The Spring Point Ledge Buoy, Portland harbor, has been shifted about half a mile seaward from the ledge by the floating ice in the harbor. It will be weighed and replaced in its proper position as soon as practicable.

GEORGE H. PREBLE, Light house Insp. 1st dist.

Portland, Jan. 28, 1857.

The Eelgrass Shoal Light Vessel has been moved from her station in Fisher's Island Sound, N. Y. She will be replaced when the Sound is clear of ice.

The Shagwong Reef Bell Boat, north of Montauk Point, has been swept away, and the Race Rock and Black Ledge iron pile Leacons, Long Island Sound, broken down by the ice. The positions will be marked by spar buoys as soon as possible.

A. LUDLOW CASE, Light house Inspector, 3d Dist.

New York, Jan. 29, 1857.

The Bartlett's Reef light ship arrived at Newport on the evening of Jan. 26. In conse-

quence of dragging her moorings seaward in the late gale, they found it necessary, on the 26th, to slip her cables and make a port.

The Frying Pan Shoals Light Vessel was again placed in her position on the 12th Jan.

C. Manigault Morris, Light-house Inspector, 6th Dist.

Charleston, Jan. 20, 1857.

The Shacford Shoals, Cornfield Point, and Bartlett's Reef Light-Vessels have been moved from their stations.

They will be replaced and their lights exhibited, as heretofore when navigation opens and Long Island Sound is free from ice.

A. Ludlow Case, Light-house Inspector 3d Dist.

New-York, Jan. 27, 1857.

Shovelful Light-Vessel, Vineyard Sound.—This light-vessel has been moved by the ice a mile to the N. and E. of her station, and in consequence her light has been extinguished.

She will be replaced at the earliest opportunity, and her light again exhibited.

C. H. B. Caldwell, Light-house Inspector, 2d Dist.

Bostond, Jan. 17, 1857.

Fog gun at Holyhead.—We learn from one of our late London papers that the Admiralty, Board of Trade and Liverpool Corporation had placed a gun of large calibre on Holyhead, to be fired during foggy weather. The gun will be fired every half hour Greenwich time, and every quarter of an hour after 5,30 P.M. till the arrival of the Dublin mail boat, and every quarter of an hour after 11,30 P.M. till the arrival of the midnight boat.

LIFE-BOATS ON THE LAKES.

In reply to inquiries made by the Hon. C. Billinghurst, of Wisconsin, upon this subject, the Secretary of the Treasury writes as follows:

Treasury Department, Dec. 22. 1856.

Sir:—I have had the honor to receive your letter of the 16th inst. inclosing a letter from J. Tomlinson, Esq., and extracts from Milwaukee and Chicago papers, relative to Government Life-Boats, and requesting my views thereon.

In answer, I beg leave to say, that for the small extent of coast between Sandy Hook and Cape Island, New Jersey, and the south side of Long Islnnd, New-York, the United States have established Life Saving Stations, consisting of boats, boat houses, cars, rockets, and all the implements and appurtenances in cases of shipwreck, and for each of these stations, it has provided a keeper at a compensation of $200 per annum.

For a limited line of the coast of Massachusetts, the United States has appropriated money in aid of the Boston Humane Society, which has, on that line, in like manner, established Life Saving Stations, with, as is believed, similar appliances, and perhaps with keepers.

Upon these lines of coast, particularly those of New Jersey and New-York, wrecks have been most frequent, and indeed are constantly to be apprehended, and they have in a great many instances proved exceedingly disastrous, both as regards life and property.

In general, Congress has made no provision for other portions of the coast, whether on the seaboard or lakes, for saving life, than to authorize a supply of the proper boats for that purpose, and the placing of them at the most suitable points. Where the Department has no Light-house Keeper or other suitable officer at the point at which it was proposed to place a boat, in whose charge it could be put, it was delivered either to the City Authorities applying, or proper individuals upon their giving bonds for the preservation and proper use thereof. Milwaukee and Chicago were places designated by law, and their being a Light-house keeper at each, a boat was placed in his charge, and it was made his duty to keep it in proper order.

I will write to both these officers and ascertain the condition of these boats.

The system thus established, I think it would not be judicious to change. Where the Government has no officer, the boat-house, if built, would be liable to continual injury and dilapidation—and considering the vast extent of coast to be supplied, it seems out of the question to provide boat-houses with keepers at all the places where wrecks might probably occur.

I am, very respectfully,

James Guthrie, Secretary of the Treasury.

OUR STATE ROOM.

Feb. 20th, 1857.

Inquiry beore Promotion.—There are now before the Senate, from the *active* list, the names of *five commanders*, *seven lieutenants*, and *twenty-three masters* in nomination for vacancies in the grades respectively above them. On the 18th inst. a warm debate sprung up in the Senate, in view of the fact that Courts of Inquiry for officers aggrieved by the action of the late Naval Board, may recommend the restoration of a sufficient number of those heretofore suspended, to fill the present vacancies in the navy.

The Court of Inquiry, composed of Captains E. A. F. Lavalette, S. H. Stringham, and W. I. McCluney, convened to-day, to reconsider those who may apply under the new law, and we have heard of some six or eight who are only awaiting the organization of the Court, which is to be governed by "the laws and regulations which now govern Courts of Inquiry." On this ground there is necessity for charges of some kind, and the *causes* for the finding of the Retiring Board would seem to constitute them. Some of those who are most concerned, however, are sanguine in their conclusions, that the Court must take them up *de novo*—exclude entirely the findings of the Board, and come to an issue on testimony alone. The

members of the Court are individually acceptable to as large a number of the aggrieved ones as any other *three*, but however conscientiously they discharge their duty, it is impossible for them to escape censure from somebody.

We are still of the opinion that the *only* court to try such cases is the Senate, and the same power which they are now exercising on nominations before them would have been equally applicable to any one of these officers, who are now obliged to risk the odium of being doubly condemned before his name is presented.

The Naval Battle in China is echoing the just praise everywhere given to our gallant navy there, for so well punishing the contemptible presumption of the Chinese at Canton. The precarious position in which the foreigners of all nations were placed at the commencement of the hostilities between the English and Chinese, led Commodore Armstrong to station at the factories, for the special protection of the Americans and their property, a force of seamen and marines, with a couple of howitzers. During the storming of the walls and the shelling of the public buildings by the English, the American force there imparted confidence to all. Notwithstanding, no concessions being made by the Chinese to the reasonable demands of the English, nearly all the Americans had left Canton, and the guard was deemed no longer necessary. On the 15th of November, Captain Foote, of the *Portsmouth*, left Whampoa in his boat for the factories, in order to remove the guard. In reaching the "Barrier," about five miles from Canton, he was fired upon from the forts! Captain Foote, willing to consider that there was possibly a mistake, rested on his oars, and caused the boat's flag, which had been flying from the staff, to be held aloft and waved, that it might be clearly distinguished. All to no purpose—the Chinese continued to fire, and as there were four forts to pass, all heavily armed, Captain F. concluded not to expose his men further, but return to Whampoa, and report the transaction to Commodore Armstrong. The Commodore at once sent a dispatch to the Viceroy of Canton, demanding explanation, but it was disregarded.

A boat was then sent from the flag-ship to sound the river up to the "Barrier." In the performance of this duty, she was also attacked, and the leadsman's head shot off. As soon as possible thereafter, the *Portsmouth* and *Levant* were placed in position within a few hundred yards of the forts, into which, *within three hours*, they threw not less than three hundred shot and shell, with deadly effect. A storming party of one hundred and eighty men, with two howitzers, under Commanders Foote, Bell, and Smith, was then landed. The forts were speedily taken possession of, and deadly havoc dealt out to the Chinese. The walls were blown up, and all the guns—nearly two hundred—on them, destroyed. While the

boats were landing, *twelve* guns, of heaviest calibre, were levelled at them, and fired simultaneously, burying the boats in a cloud of spray and smoke, but hitting nobody. But at the time of landing, a short but severe contest ensued.

The following is a list of the killed and wounded:

San Jacinto.—Killed—Edward Muller, coxswain; James Hoagland, carpenter's mate; William Mackin, seaman; Alfred Turner, coxswain; Joseph Gibbons, boatswain's mate. Wounded—Smith Benjamin, ordinary seaman; James Mc Greevy, seaman; John Brow, seaman; William Johnson, coxswain; Thomas Robinson, ordinary seaman; F. B. Petro, landsman; John Mitchell, ordinary seamen; John Stanton, ordinary seaman; William Vanhouton, apprentice boy; Thomas Pantony, coal heaver: Nicholas Dilton, coal heaver; A. McIntosh, captain forecastle.

Portsmouth.—Killed—Lewis Hetzel, apprentice boy; Thomas Crouse; apprentice boy; Charles Beam, seaman; Edward Hughes, seaman. Wounded—Patrick Melvin, private marine; John Thompson, private marine; Thomas Gaynor, ordinary seaman; John Lake, boatswain's mate; James Lines, corporal marines; Richard Crosby, ordinary seaman; James Corlace, ordinary seaman.

Levant.—Killed—Edward Riley, ordinary seamen. Wounded—Earl English, lieutenant, severe contusion; Jonathan Mubray, boatswain's mate, severely; John Russell, ordinary seaman, do; William Boyce, marine, do; Patrick Mohan, do, do; Joseph O'Neil, do, slightly.

Since this took place "Yeh" has written to the Commodore that it was entirely a mistake that led to the misunderstanding, and that the American flag *shall be* protected.

The English have, as yet, had no work to do which can compare in importance, in danger, and in success, with the operations of our squadron at the Barrier. The Admiral is evidently disposed to prosecute his measures slowly and deliberately at present, awaiting orders and reinforcements from home, before proceeding to systematized war. There are already some ten or twenty gun-boats, and several larger ships on their way to join Admiral Seymour's squadron; and I suppose still more will be fitted out as soon as the news by the last mail shall have reached the British Government.

The English Admiral, in his official despatches, remarks that the forts taken by the Americans were of extraordinary strength, and mounted with guns of the largest calibre.

The Navy Register for 1857 contains the usual year's summary of names and dates, and some important and highly politic general orders. "That steamers of war are never to be used for towing vessels," unless under certain contingencies, is specially so. Heretofore, when the flag-

ship has been a sailing-vessel, and there was a steamer in the same squadron, they have too often been as one vessel.

NAVY NEWS.

Death.—At Portsmouth, Va., E. F. Olmstead, *Master*, U. S. N., aged 47.

Dismissed.—By Court Martial, Lieut. Charles E. Fleming.

Resigned.—Captain Abraham Bigelow, Commandant New-York navy-yard. Lieuts. James Higgins, Julius G. Heileman.

Ordered.—Captain John C. Long, Commandant of navy-station, New-York. Boatswain Robert Whittaker, to the navy-yard, Philadelphia, in place of Boatswain Charles Woodland, ordered to the *Wabash*. Boatswain Pomeroy, detached from the *Wabash*. Carpenter Daniel Jones, to the Naval Asylum at Philadelphia, in place of Matthew M. Dodd, detached.

A Board of Naval Surgeons, consisting of Surgeons Blacknall, Palmer, and Miller, and P. A. Surgeon Greenhow, has been ordered for the examination of candidates for promotion and admission into the Medical Corps.

Increase of Pay.—By the Army Pay Bill just passed Congress, marine officers get an increase of twenty dollars a month, and fifty per cent on rations. It should have been more.

At Gosport Navy-Yard.—The *Dale* and *Marion* are fitting for sea. The *Columbia* and *Raritan* have their masts in, and are waiting for rigging orders. The *Powhatan* is in the dry-dock. The *Colorado* and *Roanoke* still "nearly ready" for trial trips.

The *Germantown* arrived on the 9th inst., after a three years' and two months' cruise on the Brazil station.

Philadelphia.—The *Union* has been sold at auction for $5,601, and the *Princeton*, (worth about as much,) ordered as receiving-ship, instead.

Preparations are making for erecting a new building for offices, where tne guard-honse now stands, and a new steam-house is to be built at the head of the dry-dock, for steaming planks.

New-York.—The *Wabash* is out of the dry-dock, and lies off the yard, in a state of readiness.

The *Niagara* is still progressing towards completion. It is *not true* that there has been any departure from the late Mr. Steers' designs. The government is keeping strict faith towards that distinguished constructor, and will finish the work, *to the letter*, in accordance with the undertaking.

The *Relief*, Lieutenant Commanding G. T. Sinclair, which sailed hence on the 26th of January, has just returned, last from Norfolk. She spoke a number of vessels, but found none in need of assistance.

The *Supply*, Lieut. Commanding D. D. Porter, arrived on the 22d ult., 19 days from the Belize, having left Smyrna Nov. 16, with forty-four camels. She put into Malta on the 1st of December, and sailed from there on the 7th. While in the Mediterranean, had very rough weather, and lost three camels before passing the Straits, (on the 20th Dec.,) after which time the weather was pleasant. Arrived at Port Royal, Jamaica, Jan. 20th, sailed 23d, and arrived at the Belize on the 29th. The camels were transferred to the steamer *Suevannee*, which conveyed them to Indianola, Texas, where they were all (forty-one,) landed in fine order.

The *Vincennes* is now in the dry-dock, undergoing repairs.

The *John Adams* arrived at Valparaiso on the 9th of January, from Tahiti. Lieut. Corbin was left at Tahiti, in consequence of a severe fall. Surgeon Potter remained with him, and we hope soon to hear of his recovery.

The store-ship *Release* arrived at New-Orleans on the 6th inst., from Laguira.

The *Saratoga* arrived at St. Thomas on the 28th of January, from Norfolk.

Proposals for a Steam Revenue Cutter.—The Treasury Department advertises for proposals and specifications for building a steam revenue cutter of 600 tons, with double engines and side-wheels, and to carry ten guns. It must be of the fastest sailing qualities, and rigged as a sail vessel, and be of sufficient strength not only for navigation, but also as a tug vessel, in emergencies.

NEW BOOKS.

Arctic Explorations: *The Second Grinnel Expedition in Search of* Sir John Franklin, 1853, '54, '55. By Elisha Kent Kane, M. D., U. S. N. Philadelphia: Childs & Peterson.

The results of the late eventful voyage of Dr. Kane to the Arctic regions have been given to the public in two magnificent volumes, replete with illustrations of Arctic scenery, and accompanied with a copious appendix. A narrative of the Arctic experience of Sir John Franklin himself could scarcely exceed in interest the work of Dr. Kane. We have read and re-

read its thrilling pages, with an interest surpassing that ever felt before in perusing any other memoir of nautical adventure. The fortitude and devotion of Commander Kane to the objects of this memorable expedition, was equal to any former display of these qualities known to mankind. Surrounded by difficulties of every sort on his return, and threatened by the impending danger of starvation and death, amid the drifts, disruptions, and other impediments of a hyperborean climate, in his zeal and self-denial for science, he did not hesitate sacrificing the useful articles of comfort and self-preservation, to make room in his luggage-boxes for his papers, and as many of his scientific collections also as he could pack in them. The labors of the expedition were not closed for him until the public received his inimitable account of it in the above volumes.

At last accounts from Havanna, whither Dr. Kane had gone to recruit his shattered health, we were pained to hear that his chivalrous soul was at the point of bidding farewell to its battered tenement which had served it so nobly in every zone, in its terrestrial explorations. Alas! if we are to mourn the loss of KANE! Let every reading American procure the above volumes of the great Arctic Navigator in token of honor to his genius, intelligence, and manliness.

DEATH OF DOCTOR KANE.—Since our foregoing remarks were in type, the sad news of the decease of Dr. E. K. Kane has reached us from a foreign land. Every good man, every scientific explorer of truth, every lover of his race and country, will mourn his untimely end on earth. No man of his years (about 35,) was more truly and universally loved, in every land of civilization and science.

BOAT ARMAMENT OF THE U. S. NAVY. By J. A. DAHLGREN, Commander U.S.N. Second Edition. King & Baird, Printers, Philadelphia. 1856.

Commander Dahlgren, in charge of the ordnance Department, U.S. Navy Yard, Washington, D.C., is entitled to the honor of originating the efficient Boat Armament of the Navy, and all the plans of its *material* and service have emanated from his ingenius mind, and been executed under his personal supervision. The book before us treats very lucidly of the subject, and it will give us great pleasure to give our readers a few extracts from it in future numbers of the Magazine.

SHELLS AND SHELL GUNS.—By the same author, is a work now in press, the table of Contents and Prefaratory Remarks of which we have received the proof-sheets, bids fair to disclose the most instructive and interesting

work on the subject with which Ordnance officers can become acquainted in the language. The dimensions and ranges of the U. S. Navy cannon; mode of obtaining ranges; dimensions, weights, &c., of shells; fuzes; penetration; shot and shells compared; composition of batteries; incidents of the Crimean war, &c., &c.; are to be elaborately discussed, in view of the most recent experiments, not only in the experimental Ordnance Department at Washington, (of which Commander Dahlgren is in charge,) but of practice in the battle-field and on ship-board. From the "Contents," we feel assured that this work of Commander Dahlgren will confer lasting honor on the naval science of our country, and if thoroughly studied and practiced by our naval officers, will redound in the day of trial to the glory of the navy. The labors of Bache, Maury, and Dahlgren, are conducted by the light of the present age—why cannot the *models* and *engines* of our ships of war emanate from the brains of equally competent men? Perhaps this inquiry may, as it should, engage the attention of the incoming Secretary of the Navy. We repeat it, let a compeer of the above-named distinguished naval officers be found to direct the construction of our ships of war, then our coast-charts, sailing directions, and shell-guns, will be worth something to the American people for hostile purposes.

THE CLOSE OF VOLUME V.

WITH the present number, the fifth volume of the NAUTICAL MAGAZINE AND NAVAL JOURNAL will close. We trust those of our subscribers whose subscriptions expire with it will lose no time in renewing them; and may we not hope they will commend the matter of supporting our labors to those of their friends who may be interested in nautical and naval pursuits. We would not solicit the patronage of ship-owners, builders, masters, engineers, and our friends of the United States naval service, were we not assured, by our oldest subscribers, that the sum expended annually for subscriptions to this periodical was money well *invested.* Our list is constantly increasing, and the proprietor is determined to spare no reasonable efforts to increase the value of the work. Reader, shall we not continue our present relations for succeeding volumes?